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UNIVERSITY OF NEW HAMPSHIRE

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HAM, NEW HAMPSHIRE

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New Hampshire
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Campus · University of New Hampshire · Durham, N. H.

Durham, the home of the university, is an attractive village on the Portland division of the Boston and Maine railroad, sixty-two miles from Boston, fifty-four from Portland, and five from Dover, a city of 15,000 population. Good train service and excellent trunk-line motor roads make the university easily accessible from all parts of the state.

Durham, organized in 1732, is one of the historic towns of New Hampshire. In the early days it was the home of a prosperous ship building industry. Situated at the head of tidewater on the Oyster river, it served as a distributing center for the interior of the state. During the Revolutionary war it was famous as the home of Major General John Sullivan. Near his home, in the village, the state has erected a fitting monument to his memory.

The University of New Hampshire and the New Hampshire College of Agriculture and the Mechanic Arts

DURHAM, NEW HAMPSHIRE

VOL. XXIX FEBRUARY, 1938 NO. 6

Published in September, October, November, December, January, February, March, and April by the University of New Hampshire, Durham, N. H.

BULLETIN *of the* UNIVERSITY *of* NEW HAMPSHIRE

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THE UNIVERSITY BULLETIN INCLUDES:

The Catalog of the University
The Report of the President
The Financial Report
The Catalog of the Summer School
The Pictorial Folder
The Catalog of the Graduate School

and other publications of the University

Save this catalog and bring it with you. It will be needed for reference throughout the year

Correspondence regarding the university should be addressed to the following:

General Information, E. Y. BLEWETT, Assistant to the President.

Admission, GEORGE N. BAUER, chairman of the Committee on Admission.

Catalog, OREN V. HENDERSON, Registrar.

CALENDAR

1938

JULY

S	M	T	W	T	F	S
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1939

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UNIVERSITY CALENDAR

1938–39

SUMMER SESSION

1938

June 27	Monday	Registration Day
June 28	Tuesday	Classes begin at 8 A.M.
Aug. 5	Friday	Summer Session closes at 4 P.M.

FIRST SEMESTER

1938

Sept. 13	Tuesday	Matriculation Day—Freshman Class
Sept. 19	Monday	Registration Day—Upper Classes
Sept. 20	Tuesday	Recitations begin at 8 A.M.
Sept. 22	Thursday	University Day—Afternoon holiday
Sept. 28	Wednesday	Meeting of University Senate at 4:15 P.M.
Oct. 8	Saturday	Dads' Day
Oct. 21	Friday	Annual Meeting of Board of Trustees
Nov. 10	Thursday	Mid-Semester reports to be filed, 5 P.M.
Nov. 12	Saturday	Homecoming Day
Nov. 23	Wednesday	Thanksgiving Recess—Wed., 12.30 P.M. to Mon., 8 A.M.
Dec. 17	Saturday	Christmas Recess begins at 12.30 P.M.

1939

Jan. 3	Tuesday	Christmas Recess ends at 8 A.M.
Jan. 20	Friday	Meeting of Board of Trustees
Jan. 18–27	Wed.–Fri.	First Semester examinations

SECOND SEMESTER

Jan. 30	Monday	Registration Day—All Classes
Jan. 31	Tuesday	Recitations begin at 8 A.M.
Feb. 3	Friday	Winter Carnival, Fri., 12.30 P.M., to Sat., 12:30 P.M.
Feb. 8	Wednesday	Meeting of University Senate at 4:15 P.M.
Mar. 25	Saturday	Spring Recess begins at 12.30 P.M.
Apr. 3	Monday	Spring Recess ends at 8 A.M.
Apr. 13	Thursday	Mid-Semester reports to be filed, 5 P.M.
Apr. 21	Friday	Meeting of Board of Trustees
May 20	Saturday	Mothers' Day
May 29–June 8	Tues.–Thurs.	Second Semester examinations
May 30	Tuesday	Memorial Day—Holiday
June 9	Friday	Meeting of University Senate at 4:15 P.M.
June 10	Saturday	Alumni Day—Meeting of Board of Trustees
June 11	Sunday	Baccalaureate Exercises
June 12	Monday	Class Day Exercises at 10:00 A.M. Commencement at 3:00 P.M.

SUMMER SESSION

1939

June 26	Monday	Registration Day
June 27	Tuesday	Classes begin at 8 A.M.
Aug. 4	Friday	Summer Session closes at 4 P.M.

BOARD OF TRUSTEES

His Excellency, Governor Francis P. Murphy, A.M., LL.D., *ex officio*

President Fred Engelhardt, A.M., PH.D., *ex officio*

Andrew L. Felker, *Commissioner of Agriculture, ex officio*

Roy D. Hunter, LL.D., *President* — West Claremont
June 14, 1916 to June 30, 1941

Harry D. Sawyer — Woodstock
September 15, 1926 to June 30, 1938

James A. Wellman, B.S. — Manchester
January 26, 1928 to June 30, 1939

Robert T. Kingsbury — Keene
January 27, 1928 to June 30, 1940

†*Charles H. Hood, B.S., D.SC. — Boston, Massachusetts
May 6, 1929 to June 30, 1939

George T. Hughes, A.M., LL.D. — Dover
July 1, 1931 to June 30, 1939

*John S. Elliott, B.S., *Secretary* — Madbury
July 1, 1932 to June 30, 1940

Jessie Doe — Rollinsford
July 1, 1932 to June 30, 1938

John T. Dallas, A.B., D.D., LL.D. — Concord
July 1, 1933 to June 30, 1941

Frank W. Randall, B.S. — Portsmouth
July 1, 1936 to June 30, 1940

*Rohl C. Wiggin, B.A. — Newton Centre, Massachusetts
January 21, 1938 to June 30, 1939

* Elected by Alumni.
† Died November 22, 1937.

OFFICERS OF ADMINISTRATION

FRED ENGELHARDT, PH.D., *President of the University*

JOHN C. KENDALL, B.S., *Director of the Agricultural Experiment Station and Extension Service*

GEORGE W. CASE, M.C.E., *Dean of the College of Technology and Director of the Engineering Experiment Station*

C. FLOYD JACKSON, B.A., M.S., *Dean of the College of Liberal Arts*

M. GALE EASTMAN, PH.D., *Dean of the College of Agriculture*

HERMON L. SLOBIN, PH.D., *Dean of the Graduate School*

NORMAN ALEXANDER, PH.D., *Dean of Men*

RUTH J. WOODRUFF, PH.D., *Dean of Women*

RAYMOND C. MAGRATH, *Treasurer and Business Secretary*

OREN V. HENDERSON, *Registrar*

EDWARD Y. BLEWETT, B.A., *Assistant to the President*

MARVIN A. MILLER, B.A., B.S., *Librarian*

FREDERICK W. TAYLOR, B.S. IN AGRIC., *Director of Commercial Departments, College of Agriculture*

ANDREW J. OBERLANDER, M.D., *University Physician*

HAROLD W. LOVEREN, B.S., *Superintendent of Property*

ERIC T. HUDDLESTON, B.ARCH., *Supervising Architect*

EUGENE K. AUERBACH, B.A., *Alumni Secretary and Director, Bureau of Appointments*

ENGELHARDT, FRED, *President of the University*

Ph.B., Yale, 1908; A.M., Columbia, 1915, Ph.D., 1924. Graduate study, Harvard university, 1909–10; University of Pennsylvania, 1916–17. Assistant instructor, Yale university, 1908–09; teacher and principal, public schools, New York, and private schools, Pennsylvania and Illinois until 1919; inspector, elementary education, New York State department of education, 1919; director, Bureau of Administration, Pennsylvania State department of education, 1919–22; assistant dean in charge, College of Liberal Arts, University of Pittsburgh, 1922–24; professor of educational administration, College of Education, University of Minnesota, 1924–37. Present position, 1937–

PETTEE, CHARLES H., *Dean Emeritus and University Historian*

A.B., Dartmouth college, 1874; C.E., Thayer school, *ibid.*, 1876; A.M., Dartmouth, 1877; LL.D., New Hampshire college, 1913. Served as acting president, New Hampshire college, for several months each between the administrations of Presidents Murkland and Gibbs; Presidents Gibbs and Fairchild; and Presidents Fairchild and Hetzel. Instructor in the Thayer school of Dartmouth college, and in New Hampshire college, then a department of Dartmouth, 1876–77; professor of meteorology, 1876–1928; professor of mathematics, 1877–1917; dean, 1888–1937. Present position, 1937–38 *

THOMPSON, CHARLOTTE A., *Assistant Librarian Emerita*

Graduate, Concord High school. Teacher: Durham Point school and Concord, 1871–1895. Librarian, Durham Public library, 1895–1907. Assistant Librarian, University of New Hampshire, 1907–29

ABELL, MAX F., *Assistant Agricultural Economist in the Experiment Station and Assistant Economist, Farm Management, in the Extension Service*

B.S., Cornell university, 1914; Ph.D., *ibid.*, 1924. Graduate student, Ohio State university, 1914–15. Student assistant, Cornell university, 1915–17; instructor and assistant professor, Connecticut Agricultural college, 1917–20; assistant professor, Massachusetts Agricultural college, 1920–26. Present position, 1926–

ACKERMAN, WALTER T., *Assistant Professor of Agricultural Engineering and Agricultural Engineer in the Experiment Station and Extension Service*

B.S., Connecticut Agricultural college, 1915; B.S.A.E., Iowa State college, 1922. Assistant and instructor in mechanical engineering, Connecticut Agricultural college, 1916–17; supervisor of agriculture, Connecticut State board of education, 1917–18; in charge of agricul-

* *Died March 23, 1938.*

tural engineering department, Connecticut Agricultural college, 1919–20; instructor in agricultural engineering, Iowa State college, 1920–23; assistant professor of agricultural engineering, Virginia Polytechnic institute, 1924. Specialist in rural electricity in the Experiment station, University of New Hampshire, 1925–32; assistant professor of agricultural engineering and agricultural engineer of the Experiment station, 1932–36; agricultural engineer in the Experiment station and Extension service. 1936–37. Present position, 1937–

ADAMS, ELOI A., *Agricultural Agent in Strafford County*
B.S., University of New Hampshire, 1918. Practical farmer since 1918; service department, University of New Hampshire, 1919–28. Present position, 1928–

ADAMS, RUTH C., *Instructor in Economics*
A.B., North Central college, Illinois, 1928. Graduate courses in business education: University of Southern California, 1931; University of Chicago, 1932; Boston university, 1935; instructor, Flora Macdonald college, 1917–19; Baraboo Commercial college, 1919–21. Confidential secretary to chairman Federal Reserve bank of Chicago, 1921–24. Present position, 1935–

AHERN, CORNELIUS J., *Agricultural Agent in Cheshire County*
B.S., University of New Hampshire, 1934. General Ice Cream corporation, 1934–36. Acting Agricultural agent in Cheshire county, University of New Hampshire Extension service, 1936. Present position, 1937–

ALEXANDER, NORMAN, *Dean of Men and Associate Professor of Economics*
B.A., University of North Dakota, 1919; M.A., *ibid.*, 1920; LL.B., Yale university, 1922; Ph.D., Columbia university, 1931. Carnegie Teaching fellow, Columbia university 1924–25. President, Eastern Association of Deans and Advisers of Men 1931–32. Principal of schools, Clyde, North Dakota, 1915–17. Instructor in economics, University of New Hampshire, 1922–24; assistant professor, 1925–28; associate professor, 1928–29. Present position, 1929–

AUERBACH, EUGENE K., *Alumni Secretary and Director of the Bureau of Appointments*
B.A., University of New Hampshire, 1928; M.B.A., Harvard Graduate School of Business Administration, 1930. Warehouse superintendent, The Great Atlantic and Pacific Tea company, 1930–35; Assistant to the President, H. Tabenkan company, 1935–36. Assistant director, bureau of appointments, University of New Hampshire, 1936; acting alumni secretary and acting director of the bureau of appointments, 1936–37. Present position, 1937 —

AYER, PERLEY F., *Instructor in Agricultural Economics and Specialist in Rural Organization and Recreation in the Extension Service*
B.S., University of New Hampshire, 1922; student, Cornell university,

1935–36; teacher and farmer at Country Life academy, Star, North Carolina, 1922–24; teacher, farm manager, and supervisor of boys' work at Pleasant Hill academy, Pleasant Hill, Tennessee, 1924–27; Boys' and Girls' Club agent in Merrimack County, University of New Hampshire, 1927–36. Present position, 1936–

BABB, ANITA N., *Home Demonstration Agent in Rockingham County*
Diploma, Boston School of Domestic Science; certificate, dietetics training, Wilmington, Delaware; certificate, dietetics training, Boston, Massachusetts; dietitian, Springfield, Mass., three years; teacher, Bangor, Maine, high school, one year; dietitian, Westfield, Mass., two and one-half years; dietitian, Camp Big Pine, eleven summers; home demonstration agent, Maine, three years; teacher, Spellman seminary, two years. Present position, 1934–

BABCOCK, DONALD C., *Professor of History*
B.A., University of Minnesota, 1907; M.A., *ibid.*, 1908; S.T.B., Boston university, 1912. Ministry, 1909–19. Assistant professor of history, New Hampshire college, 1918–21; associate professor of history and political science, 1921–25. Present position, 1925 —

BACHELDER, JOSEPH E., JR., *Instructor in Sociology*
B.A., Westminster college, 1933; Ph.D., Yale university, 1937. Research assistant in Sociology, Institute of Human Relations, Yale university, 1934–36; Carnegie fellow, Yale university, 1933–34, and a Yale university fellow, 1935–36. Present position, 1936–

BARRACLOUGH, KENNETH E., *Extension Forester*
B.S., New York State College of Forestry, Syracuse university, 1921; blister rust agent with Bureau of Plant Industry, Rockingham county, New Hampshire, 1922–26; forester for Federal Emergency Relief Administration in the Northeastern States, office of Federal Extension service, April–June, 1935. Present position, 1926–

BARSTOW, CAROLINE O., *Library Assistant*
Present position, 1916–

BATCHELDER, LYMAN J., *Instructor in Woodshop, Department of Mechanical Engineering*
Perkins and Bancroft, architects, Haverhill, Mass., 1891–93; Batchelder and Guimon, store and bank fixtures, 1893–97; superintendent, mill and box shop, 1897–1900; foreman, Haverhill Wood Heel Company, Haverhill, Mass., 1900–03; foreman, woodshop, to chief draftsman, Laconia Car Company, Laconia, N. H., 1903–15. Present position, 1915–

BAUER, GEORGE N., *Professor of Statistics in the Department of Mathematics and Officer in Charge of Freshmen*
B.S., University of Minnesota, 1894; M.S., University of Iowa, 1898; Ph.D., Columbia university, 1900; Goettingen, Germany, 1907–08. Principal of High school, Montevideo, Minn., 1894–95; instructor in mathematics, University of Iowa, 1895–98; instructor, associate pro-

fessor, professor, chairman of department of mathematics, University of Minnesota, 1900–20; associate professor of mathematics, University of New Hampshire, 1924–28; acting dean of men, 1928–29; professor of statistics, and officer in charge of freshmen, 1928–33, College of Liberal Arts, 1929–33; professor of statistics, College of Technology, and officer in charge of freshmen, 1933–34. Present position, 1934–

BECKWITH, MARION C., *Instructor in Physical Education for Women*
A.B., Oberlin college, 1935; M.Ed., University of New Hampshire, 1937. Graduate assistant in the Department of Physical Education for Women, University of New Hampshire, 1935–37. Present position, 1937–

BEECHER, MYRTIS E., *Home Demonstration Agent in Hillsboro County*
Graduate, Framingham Normal school, 1919; Summer school, Chautauqua, N. Y., 1923; teacher, Gardner, Mass., 1919–20; executive secretary, Girls' club, Gardner, 1920–24; home service department, Washburn Crosby company, 1924–26. Present position, 1926–

BEGGS, ANN F., *Extension Economist, Home Management*
Nason institute, 1913–15; University of Chicago, January–September, 1927. Teacher, Hopkinton, N. H., 1915–16; Rochester, N. H., 1916–17. Emergency home demonstration agent, Hillsborough county, University of New Hampshire Extension service, 1917–19; home demonstration agent, Hillsborough county, 1919–20; assistant state home demonstration leader, 1922–29; home management specialist, 1929–1937. Present position, 1937–

BENNET, MARION B., *Assistant Boys' and Girls' Club Agent in Merrimack County*
B.S. in Educ., State Teachers' college, Framingham, Mass., 1930. Teacher, Home Economics, Vineyard Haven, Mass., 1930–32; public welfare visitor, Springfield, Mass., 1933–35; teacher, evening school, Springfield, Mass., 1933–35; assistant county club agent, Springfield, Mass., 1935–37. Present position, 1938–

BERZUNZA, JULIO, *Assistant Professor of Languages*
B.A., University of Oklahoma, 1921; M.A., University of Illinois, 1923. Assistant in Spanish, University of Oklahoma, 1919–21; assistant in romance languages, University of Illinois, 1921–25; instructor in Spanish and Italian, University of Maine, 1926–28. Present position, 1928–

BINGHAM, SYLVESTER H., *Assistant Professor of English*
A.B., Dartmouth college, 1922; A.M., Harvard university, 1929; Ph.D., Yale university, 1937. Master, Taft school, 1926–28; instructor and assistant professor, Rollins college, 1928–33. Present position, 1936–

BISBEE, HARLAN M., *Associate Professor of Education*
A.B., Bowdoin college, 1898; A.M., Harvard university, 1905. Assistant, Rumford Falls, Maine, High school, 1898; principal, Brewer,

Maine, High school, 1899–1904; principal, Robinson seminary, Exeter, N. H., 1905–28; assistant professor of education, University of New Hampshire, 1928–30. Present position, 1930–

BLEWETT, EDWARD Y., *Assistant to the President*
B.A., University of New Hampshire, 1926. Ginn and company, Boston, 1926–27; alumni secretary, University of New Hampshire, 1927–29; alumni secretary and executive assistant, 1928–29; executive secretary, 1929–37. Present position, 1937–

BLICKLE, ROBERT L. *Research Chemical Assistant in Entomology in the Experiment Station*
B.S., Ohio State university, 1937. Assistant in entomology, Louisiana State university, June 1937–January 1938. Present position, January 15, 1938–

BLOOD, EDWARD J., *Instructor in Physical Education and Athletics*
B.S., University of New Hampshire, 1935. U.S. Olympic team, Lake Placid, 1932; Germany, 1936. Present position, 1936–

BLOOD, PAUL T., *Assistant Agronomist in the Experiment Station*
B.S., New Hampshire college, 1921; M.S., University of New Hampshire, 1924. Graduate assistant in horticulture, University of New Hampshire, 1921–1924; with Granite State Nurseries, Exeter, N. H., 1924–28. Present position, 1928–

BOTTORFF, CHARLES A., JR., *Assistant Professor of Poultry Husbandry and Poultry Pathologist of the Experiment Station*
B.S., in Bacteriology, B.S. in Veterinary Medicine, and D.V.M., Washinton State college, 1928. Instructor in poultry husbandry and poultry pathologist of the Experiment station, University of New Hampshire, 1928–35. Present position, 1935–

BOURNE, ELIZABETH, *Boys' and Girls' Club Agent in Rockingham County*
Diploma, Framingham Normal school, 1924. Teacher, household arts, Oak Bluffs, Mass., 1924–26. Present position, 1926–

BOWEN, IRMA G., *Assistant Professor of Home Economics*
B.S., University of Rochester, 1925; graduate of Mechanics Institute, Rochester, New York, 1911; Teachers college, Columbia university, 1915–17. Studied, Boston Museum of Fine Arts; Grace Cornells' Art school; and Fellowcrafter's school, Boston. Teacher: Mechanics Institute, 1911–15; New York Institute for the Blind, 1915–16; University of Nebraska, 1917–18; University of Louisiana, 1918; government service, 1918–20; director of training shop, Fashion Park Clothing factory, 1919–20. Instructor in home economics, University of New Hampshire, 1920–27. Present position, 1927–

BOWLER, EDMOND W., *Professor of Civil Engineering*
S.B. in Sanitary Engineering, Massachusetts Institute of Technology, 1914; assistant, Massachusetts Institute of Technology, 1914–15; topographer, U. S. Geological survey, 1913, 1915, 1916; second and

first lieutenant, Engineer corps, U. S. A., Canal Zone, 1917–19. Assistant professor of mathematics, University of New Hampshire, 1920–27; assistant professor of civil engineering, 1927–28; associate professor, 1928–29. Present position, 1931–

BRADLEY, R. CLAUDE, *Extension Poultryman*

A.B., B.S., B.S. Educ., Central Missouri State Teachers college, 1920; M.S., Cornell university, 1921; Ph.D., *ibid.*, 1926. Instructor in residence and extension teaching in poultry husbandry, Cornell university, 1921–26; research specialist for Pacific Egg producers, New York City, 1927; Manager, Garber Leghorn farm, Enid, Oklahoma, 1927–31. Present position, 1931–

BREON, WILLARD S., *Graduate Assistant in Agricultural and Biological Chemistry in the College of Agriculture*

B.S., Pennsylvania State college, 1937. Present position, 1937–

BROWN, FRED H., *Staff Sergeant, Detached Enlisted Men's List U. S. A., Assistant in Military Science and Tactics.*

Enlisted in U. S. army, 1915; service in A.E.F., France, from 1917; in action near Lunéville, Lorraine, August, 1918; participated in battles of St. Mihiel and the Meuse-Argonne, September and October, 1918; promoted sergeant, 1919; service on the Rhine, 1919; returned to the United States, 1922; R.O.T.C., University of New Hampshire, 1924; staff sergeant, 1937

BUFFINGTON, ALBERT F., *Instructor in Languages*

A.B., Bucknell university, 1928; A.M., Harvard university, 1932; Ph.D., *ibid.*, 1937. Student, summer 1926, University of Berlin, Germany. University of Pennsylvania, Lauber Fellowship in German, 1930; University of Pittsburgh, Fellowship in German, 1930; University of Chicago Fellowship, 1930. Part-time instructor in German, Bucknell university, 1927–28; head of German department, Central High school, Scranton, Pa., 1928–30; part-time instructor in German, Harvard university, 1930–37. Present position, 1937–

BURACKER, SAMUEL L., *Major, Infantry, Assistant Professor of Military Science and Tactics*

Virginia Military Institute, 1912–15. Served with 318th infantry, 80th division, A.E.F., in the Artois sector, Picardy, St. Mihiel, and in the Meuse-Argonne. Communications Course, Second Corps schools, Chatillon-sur-Seine, 1918; 12th U. S. infantry, Fort Meade, Maryland, 1920–21; commanded the Infantry school detachment, Fort Benning, Georgia, 1921–24; headquarters staff, Infantry school, 1924–25; graduate, Company Officers' class, Infantry school, 1926; 15th U. S. infantry, Tientsin, China, 1926–29; headquarters staff, Infantry school, 1930–34. Present position, 1934–

BUTLER, ORMOND R., *Professor of Botany and Botanist of the Experiment Station*

B.S., M.S., University of California, 1905; Ph.D., Cornell university, 1910. Assistant in viticulture, 1904–05; assistant at Whittier Patho-

logical laboratory, 1906–08; research instructor, department of horticulture, University of Wisconsin, 1910–12. Botanist, New Hampshire Experiment station, 1912. Present position, 1912–

CALNAN, C. DOROTHY, *Assistant in Zoölogy*
B.S., University of New Hampshire, 1933; M.S., *ibid.*, 1936. Present position, 1937–

CARLISLE, NANCY E., *Home Demonstration Agent in Carroll County*
B.S., University of New Hampshire, 1934. Acting home demonstration agent, Carroll county, January–March, 1935; filing clerk, department of agriculture, Concord, N. H.; commercial demonstrating, 1935. Home demonstration agent at large, University of New Hampshire, 1935–38. Present position, 1938–

CASE, GEORGE W., *Dean of the College of Technology, Director of the Engineering Experiment Station, and Professor of Mechanical Engineering*
B.S. in C.E., Purdue university, 1906; M.C.E., Cornell university, 1912. Assistant professor of civil engineering, Purdue, 1907–13; assistant professor of sanitary engineering, 1913–14, associate professor of sanitary engineering, 1914–16, professor of sanitary engineering, 1919–22, University of Pittsburgh. Chief engineer, American City Engineering company, 1920–25. Dean of the College of Technology and professor of mechanical engineering, University of New Hampshire, 1925–29; professor of civil engineering, 1926–29. Present position, 1929–

CAUGHEY, ROBERT A., *Research Assistant in the Engineering Experiment Station*
B.S., University of New Hampshire, 1935; M.S., Massachusetts State college, 1937. Present position, 1937–

CHAPMAN, DONALD H., *Assistant Professor of Geology*
B.A., University of Michigan, 1927; M.A., *ibid.*, 1928; Ph.D., *ibid.*, 1931. Assistant in geology, University of Michigan, 1926–28; instructor in geology, Dartmouth college, 1928–30; part-time instructor in geology, University of Michigan, 1930–31; visiting professor of physiography and meterology, department of geography of the School of Geology, Louisiana State university, second semester, 1937–38. Instructor in geology, University of New Hampshire, 1931–36. Present position, 1936–
Leave of absence, second semester, 1937–38

CHARLES, T. BURR, B.S., *Professor of Poultry Husbandry and Poultry Husbandman of the Experiment Station*
B.S., Cornell university, 1915. Assistant and instructor, Cornell university, 1913–16. Practical poultryman in New York state, 1916–20, 23–26. Instructor and assistant professor, Pennsylvania State college, 1920–23; associate professor, 1926–28. Present position 1928–

CHRISTENSEN, ERNEST W., *Assistant Professor of Physical Education and Athletics*

B.S., University of New Hampshire, 1923. Assistant coach of football, University of New Hampshire, fall terms of 1923 and 1924. Instructor in physical education and athletics, University of New Hampshire, 1925–35. Present position, 1935–

CLAPP, HENRY S., *Instructor in Ornamental Horticulture and Supervising Landscape Architect*

B.S., Cornell university, 1931. Graduate study, Cornell university, spring 1931 and summers 1933, 36; Harvard School of Landscape Architecture, 1935–36; nurseryman, Long Island State Park commission, Islip, New York, 1930. Present position, 1931–

CLAPP, JAMES W., *Instructor in Chemistry*

B.S., Massachusetts State college, 1936. Graduate assistant in chemistry, University of New Hampshire, 1936–37. Present position, 1937–

COATES, WILLIAM H., *Assistant in the Soil Survey, Experiment Station*

B.S., University of New Hampshire, 1934. Present position, 1935–

COLBURN, HAZEL A., *Assistant Boys' and Girls' Club Agent in Hillsborough County*

B.S., University of New Hampshire, 1935. Present position, 1935–

COLOVOS, NICHOLAS F., *Assistant in Animal Husbandry in the Experiment station*

B.S., University of New Hampshire, 1927; M.S., *ibid.*, 1931. Present position, 1928–

CONKLIN, JAMES G., *Instructor in Entomology and Assistant Entomologist of the Experiment Station*

B.S., Connecticut Agricultural college, 1926; M.S., University of New Hampshire, 1929. Graduate work, Ohio State university, 1929–31. U.S.D.A., Bureau of Entomology, 1926–28. Graduate Assistant, Ohio State university, 1929–31. Field assistant, U.S.D.A., Bureau of Entomology, summer 1930. Present position, 1931–

CONROY, JOHN J., *Instructor in Physical Education and Athletics*

B.A., University of New Hampshire, 1932. Assistant, department of physical education and athletics, University of New Hampshire, 1932–35. Present position, 1935–

CORTEZ, EDMUND A., *Assistant Professor of English*

B.A., Taylor university, 1923; B.O., Asbury college, 1924; B.D., Asbury Theological seminary, 1925; M.A., Columbia university, 1926; Ed.M., Harvard university, 1927; organizer and director of social-religious groups, Taylor university, 1921–23; associate in dramatics and public speaking, Asbury college, 1924–25; assistant supervisor of religious education, Labor Temple, New York city, 1925–26; part-time instructor in declamation, Phillips Exeter academy, 1928–33. Instructor in English, University of New Hampshire, 1927–29. Present position, 1929–

COULTER, CHARLES W., *Professor of Sociology*
B.A., University of Toronto, 1908; B.D., Victoria college, 1909; M.A., Yale university, 1910; Ph.D., *ibid.*, 1914. Assistant in economics, Yale university, 1914; instructor in sociology, Western Reserve university, 1915–19; assistant professor, Western Reserve university, 1919–23; exchange professor, University of Nanking, fall semester, 1922–23; Princeton-in-Peking lecturer, University of Peking, spring semester, 1922–23; Summer schools: Lakeside, 1926, 27; Hampton institute, 1928; Western Reserve university, 1929; visiting professor to universities of South Africa under Carnegie corporation, 1929–30; professor of sociology, Ohio Wesleyan university, 1923–34. Present position, 1934–

COWDEN, HERBERT B., *Instructor in Chemistry*
B.S., University of New Hampshire, 1936. Graduate assistant in chemistry, University of New Hampshire, 1936–37. Present position, 1937–

COWELL, WILLIAM H., *Professor and Director of Physical Education and Athletics*
B.S., University of Kansas, 1910; University of Illinois, 1911–12; University of Pittsburgh, 1913. Coach, Haskell institute, Kansas, 1914. Present position, 1915–

DAGGETT, ALBERT F., *Assistant Professor of Chemistry*
B.S., University of New Hampshire, 1928; M.S., *ibid.*, 1930; Ph.D., Columbia university, 1934. Instructor, University of New Hampshire, 1928–31; research associate, Columbia university, first semester, 1934–35; instructor, Hunter college, second semester and summer session, 1934–35; instructor in chemistry, University of New Hampshire, 1935–37. Present position, 1937–

DART, J. DORIS, *Head Cataloguer*
B.A., McGill university, 1921; graduate student, Yale university, 1921–23; certificate, Pratt Institute School of Library Science, 1925; cataloguer, Yale university library, 1926–29; acting librarian, University of New Hampshire, February 6–March 21, 1932. Present position, 1929–

DAVIS, HENRY A., *Assistant in Agricultural and Biological Chemistry in the College of Agriculture and the Experiment Station*
B.S., University of New Hampshire, 1932; M.S., *ibid.*, 1934. Graduate assistant in agricultural and biological chemistry in the Experiment station, University of New Hampshire, 1932–34. Present position, 1934–

DAVIS, MARION S., *Home Demonstration Agent in Sullivan County*
B.E., Keene Normal school, 1929. Teacher of home economics, Springfield, Vermont, high school, 1929–37. Present position, 1937–

DAWSON, CHARLES O., *Instructor in Civil Engineering*
B.C.E., Ohio State university, 1930. Present position, 1930–

DEGLER, CARROLL M., *Assistant Professor of Economics*
A.B., University of Kansas, 1925; M.B.A., New York university, 1927. Student assistant, University of Kansas, 1923–25; assistant instructor, New York university, 1927–28 and 1936–37; instructor in economics, University of New Hampshire, 1928–36. Present position, 1936–

DEQUOY, STANLEY W., *Boys' and Girls' Club Agent in Grafton County*
Graduate, Essex County Agricultural school, 1917. Poultryman, North Andover, Mass., 1918–19; egg-laying contest poultryman, Essex County Agricultural school, 1920–21; Club agent, Essex county, Mass., 1921–26. Present position, 1926–

DEMOS, MILTIADES S., *Assistant Professor of Mathematics*
B.S., Robert college, Constantinople, Turkey, 1922; Ph.D., Harvard university, 1926. Sheldon Traveling fellow of Harvard university, Munich, Germany, 1926–27. Instructor, Harvard university, 1927–28; instructor, Columbia university, 1928–31. Present position, 1931–

DEVENS, W. GEORGE, *Captain, Coast Artillery Corps, Assistant Professor of Military Science and Tactics*
B.S., United States Naval academy, 1924. Graduate of Coast Artillery school, regular course, 1935; Ordnance school, Course II, 1931; School for bakers and cooks, Fort McKinley, Philippine Islands, 1929; 52nd Coast artillery, 1924–28; 91st Coast artillery, Philippine Islands, 1928–30; ordnance department, 1930–34; education and recreation officer, Fort Mills, Philippine Islands, 1929–30; department director, Ordnance Field Service school, Raritan arsenal, New Jersey, 1931–34. Present position, 1935–

DICKEY, EDNA F., *Assistant in History*
B.A., University of New Hampshire, 1933; M.A., *ibid.*, 1936. Graduate assistant in history, University of New Hampshire, 1934–36. Present position, 1936–

DIXON, PAUL J., *Boys' and Girls' Club Agent in Carroll County*
B.S., University of New Hampshire, 1928. Present position, 1928–

DOE, ROGER M., *Assistant in Animal Husbandry in the Experiment Station*
B.S., University of New Hampshire, 1934; M.S., *ibid.*, 1936. Present position, 1935–

DONOVAN, EDWARD T., *Assistant Professor of Mechanical Engineering*
B.S., University of Wisconsin, 1921. Assistant, University of Wisconsin, 1921; assistant and instructor, Purdue university, 1921–24; assistant engineer, Chicago, Milwaukee and St. Paul railway, 1924–26. Present position, 1926–

DOUGHERTY, LAWRENCE A., *Extension Economist in Marketing*
B.S., Purdue university, 1921. Teacher, secondary schools and normal college, Iowa, Indiana, and Montana, 1921–30. Present position, 1930–

DOWNEY, PAUL B., M.S., *Assistant in Chemistry*
B.S., Worcester Polytechnic institute, 1936; M.S., University of New Hampshire, 1938. Present position, February 1, 1938–

DUNN, STUART, *Assistant Professor of Botany and Assistant Botanist of the Experiment Station*
B.S., University of Minnesota, 1923; M.S., Iowa State college, 1925; Ph.D., University of Minnesota, 1931. Assistant in plant physiology, University of Minnesota, 1923–24; fellow in botany, Iowa State college, 1924–25; instructor in plant physiology, Iowa State college, 1925–26. Instructor in botany and assistant botanist of the Experiment station, University of New Hampshire, 1926–37. Present position, 1937–

DURGIN, ROSLYN C., *Record of Performance Inspector and Research Assistant in Poultry Husbandry in the Experiment Station*
B.S., University of New Hampshire, 1930. Assistant poultry tester and assistant foreman of the poultry plant, University of New Hampshire, 1930–31; assistant poultry tester in the Experiment station, 1931–35; record of performance and certification inspector in poultry husbandry in the Experiment station, 1935–36. Present position, 1936–

EADIE, WILLIAM R., *Instructor in Zoölogy*
B.S., University of New Hampshire, 1932; M.S., *ibid.*, 1933. Assistant in zoölogy, University of New Hampshire, 1933–35. Present position, 1935–

EASTMAN, M. GALE, *Dean of the College of Agriculture and Professor of Agricultural Economics*
B.S., New Hampshire college, 1913; M.S., Cornell university, 1916; Ph.D., *ibid.*, 1931. County agent, Sullivan county, New Hampshire, 1913–14; assistant commissioner of agriculture, State House, Concord, N. H., 1914–15; superintendent, Willow farm, New London, N. H., 1916–18; assistant professor of agronomy and assistant agronomist of the Experiment station, New Hampshire college, 1918–25; associate professor of agronomy and associate agronomist of the Experiment station, 1925–29; professor of agricultural economics and associate agricultural economist of the Experiment station, 1929–31; associate dean, 1931–33. Present position, 1933–

EKDAHL, ADOLPH G., *Associate Professor of Psychology*
D.M.D., Tufts College Dental school, 1912; A.B., Clark college, 1919; A.M., *ibid.*, 1920; Ph.D., Ohio State university, 1925. Assistant and scholar in psychology, Clark university, 1919–20; instructor in psychology, Syracuse university, 1920–22; assistant professor of psychology, *ibid.*, 1922–23; instructor in psychology, Ohio State university, 1923–25; professor of education, Howard college Summer school, 1926, 27, and 28. Assistant professor of education, University of New Hampshire, 1926–28; associate professor of educa-

tion and psychology, 1928–29; associate professor of philosophy and psychology, 1929–34. Present position, 1934–

EKDAHL, NAOMI M. G., *Assistant Professor of Psychology*
B.A., Syracuse university, 1922; M.A., *ibid.*, 1923; Ph.D., Ohio State university, 1925. Dean of women and professor of education, Howard college Summer school, 1927; dean of women and instructor in education, University of New Hampshire Summer school, 1928 and 1929; dean of women and assistant professor, *ibid.*, 1930–; instructor (part time) in education, University of New Hampshire, 1926–29; assistant professor of education, 1929–34. Present position, 1934– Leave of absence, second semester 1937–38

ELLIS, ELIZABETH E., *State Nutrition Specialist in the Extension Service*
B.S., Teachers college, Columbia university, 1927; M.A., *ibid.*, 1929. Graduate in home economics, Normal school, Truro, Nova Scotia, 1916; home economics diploma, MacDonald institute, Guelph, Ontario, 1920. Instructor, School of Home Economics, Truro; Halifax Ladies college, Nova Scotia; Soldier Settlement board, Woman's institute, and the Halifax Health center, 1916–27. Present position, 1929–

ELLSWORTH, CLIFFORD C., *Assistant Boys' and Girls' Club Agent in Rockingham County*
B.S., University of New Hampshire, 1935. Present position, 1935–

EVANS, NELL W., *Instructor in Physical Education for Women*
B.S. in P.E., Sargent college of Boston university, 1935; M.Ed., University of New Hampshire, 1937. Graduate assistant in physical education for women, University of New Hampshire, 1935–37. Present position, 1937–

FALT, MARY H., *Circulation Librarian*
B.A., Acadia, 1926; B.S., Simmons college, School of Library Science, 1927. Present position, 1927–

FLOYD, JOHN A., *Instructor in Languages*
A.B., Boston University 1928; Diplôme de Français; Degré Supérieur, University of Dijon, France, 1929; M.A., Middlebury college, 1937. Present position, 1929–

FOGG, HEMAN C., *Associate Professor of Chemistry*
B.S., New Hampshire college, 1918; M.S., *ibid.*, 1920; Ph.D., University of Michigan, 1933. Assistant in chemistry, New Hampshire college, 1918–21; instructor in chemistry, 1921–27; assistant professor of chemistry, 1927–36. Present position, 1936–. Leave of absence, 1937–38

FOGG, LLOYD C., *Assistant Professor of Zoölogy*
B.S., Dartmouth college, 1922; M.S., *ibid.*, 1924; Ph.D., Columbia university, 1930. Instructor, general biology and genetics, Dartmouth college, 1922–24; instructor, general biology, Washington Square college, New York university, 1924–31; cytologist, assigned to

cancer investigations at Harvard Medical school, U. S. Public Health service, 1932–36; research fellow in preventive medicine and hygiene, Harvard Medical school. Instructor in zoölogy, University of New Hampshire, 1937. Present position, 1937–

FOULKROD, GEORGE M., *Assistant Professor of Agricultural Engineering and Assistant Agricultural Engineer in the Extension Service*
B.S., Pennsylvania State college, 1919; B.S. in agricultural engineering, *ibid.*, 1931; M.S. in agricultural education, *ibid.*, 1931. Instructor and assistant professor, Pennsylvania State college, 1919–31. Instructor in agricultural engineering and assistant agricultural engineer in the Experiment station, University of New Hampshire, 1933–36; assistant professor of agricultural engineering in the department of agronomy, 1936–37. Present position, 1937–

FRENCH, KENDRICK S., *Instructor in Chemistry*
B.S., University of New Hampshire, 1935; M.S., *ibid.*, 1937. Student assistant in chemistry, University of New Hampshire, 1933–35. Present position, 1935–

FUNKHOUSER, JAMES A., *Assistant Professor of Chemistry*
B.S., Carnegie Institute of Technology, 1925; Ph.D., Ohio State university, 1930. Assistant and instructor, Ohio State university, 1926–30. Present position, 1930–

GERAGHTY, MARY L., *Research Assistant in Agricultural Economics in the Experiment Station*
A.B., Mt. Holyoke college, 1933. Clerk, actuarial department, Massachusetts Mutual Life Insurance company, 1934–37. Present position, 1937–

GETCHELL, EDWARD L., *Associate Professor of Mechanical Engineering*
B.S., University of Maine, 1914; E.E., *ibid.*, 1920. Engineering staff, Stone & Webster, 1914–15; assistant superintendent, Gore Welding & Manufacturing company, Boston, 1915–16; submaster, Lawrence academy, Groton, Mass., 1916; principal, Westport High school, 1917. Instructor in mechanical engineering, New Hampshire college, 1917; in charge of auto mechanics and gas engine section in connection with vocational work at New Hampshire college, 1918; acting head of department, 1918–19; assistant professor of mechanical engineering, 1918–29. Present position, 1929–

GIBBS, KENNETH E., *Boys' and Girls' Club Agent in Hillsborough County*
B.S., University of Maine, 1923. State forester, Orono, Maine, summer of 1923; agricultural teacher, Leavitt institute, Turner Center, Maine, 1923–25. Present position, 1925–

GILLETTE, WILLARD R., *Graduate Assistant in Botany in the Experiment Station*
B.S., Massachusetts State college, 1936. County supervisor, shade tree pest control, Middlesex county, Mass., June–September, 1935. Present position, 1936–

GLOVER, LEON C., *Research Assistant in Entomology in the Experiment Station*
B.S., University of New Hampshire, 1923; M.S., *ibid.*, 1928; Ph.D., Iowa State college, 1936. Present position, 1928–

GRANT, ROBERT H., *Instructor in English*
A.B., Bowdoin college, 1933. Teacher: Gardiner, Maine, High school, 1933–36; Laconia, New Hampshire, High school, 1936–37. Present position, 1937–

GRAY, RENA, *Home Demonstration Agent in Belknap County*
B.S., Simmons college; A.M., Columbia university, 1928. Home economics teacher, Massachusetts, New Hampshire, and Hawaii, 1917–27. Present position, 1928–

GRASSO, SALVATORE, *Assistant in Civil Engineering*
B.S., University of New Hampshire, 1937. Student engineer, Moose Brook Park C.C.C. Camp, Gorham, N. H., June–September, 1935; with U. S. army engineers on flood control projects, July–September, 1936. Present position, 1937–

GRIGAUT, PAUL L., *Assistant Professor of Languages*
B. ès L., 1926, Certifié de Licence (Sorbonne); Diplôme de l'Ecole du Louvre, 1932. Lycée Henri IV, Paris, 1917–24; Paris university, Sorbonne, 1924–27, 1931–32; National School of the Louvre Museum, Paris, 1926–27. Instructor in languages, University of New Hampshire, 1927–30. Present position, 1930–

GRINNELL, HAROLD C., *Assistant Professor of Agricultural Economics and Assistant Agricultural Economist in the Experiment Station*
B.S., Cornell university, 1921; M.S., *ibid.*, 1930. Dairy farmer, Broadalbin, New York, 1921–28; field agent, Federal Farm board, 1930–31; acting agricultural economist, University of Vermont, 1931–32. Present position, 1932–

HADDOCK, JAY L., *Extension Agronomist*
B.S., Brigham Young university, 1930; M.S., Massachusetts State college, 1932. Instructor, agronomy department, Massachusetts State college, 1930–35. Present position, 1935–

HAGER, RUSSELL P., *Assistant in Zoölogy*
B.A., Bates college, 1934; M.A., University of Illinois, 1935. Graduate student, Brown university, 1935–37. Present position, 1937–

HALL, CLYDE N., *Assistant Extension Dairyman*
B.S., University of Maine, 1923. Teacher, New York, 1923–25; Maine, 1925–28. Milk tester, Mass., 1929–32; New Hampshire, 1932–33. Present position, 1933–

HALL, MARY A., *Acting Boys' and Girls' Club Agent in Cheshire County*
B.Ed., Keene Normal school, 1929. Teacher, High school, Canaan, New Hampshire, 1929–33; recreation advisor, Cheshire county, 1934–37. Present position, 1937–

HARTWELL, WILLIAM H., *Assistant Professor of Physics*
B.S., Boston university, 1924; M.A., Wesleyan university, 1927. Assistant in physics, Boston university, 1924–26; assistant in physics, Wesleyan university, 1926–27; instructor in physics, University of Maine, 1927–28; assistant in physics, Harvard university, 1928–29. Instructor in physics, University of New Hampshire, 1929–33. Present position, 1933–

HAUSLEIN, JOHN D., *Assistant Professor of Economics*
B.A., Yale university, 1916; M.A., Yale university, 1920. Laboratory assistant in accounting, Yale university, 1917; junior accountant, Whittlesey, Wythes & Wilson, New York city, 1919; field auditor, U. S. Housing corporation, Bridgeport, Connecticut, 1920; instructor in accounting, Yale university, 1921–26. Present position, 1926–

HENDERSON, OREN V., *Registrar*
Valparaiso university. Purchasing agent, New Hampshire college, 1914–20; executive secretary and registrar, 1920–21. Present position, 1921–

HENNESSY, BETHYL C., *Assistant in Oral English*
Graduate, Oakland City college, School of Oratory, 1911; special student, King's School of Oratory, 1912; special student of Miss Diana Storm (Washington Square Players' school, New York city), 1919. Professional reader, 1913–22. Instructor in English (part-time), University of New Hampshire, 1924–25; instructor in English, 1925–28. Present position, 1929–

HENNESSY, WILLIAM G., *Associate Professor of English*
A.B., Boston university, 1916; A.M., Boston university, 1924. Professional stage manager and drama director, 1916, 1919–21; A.E.F., U.S.A., 1917–19; instructor in English and history, Hampton institute, Virginia, 1921; instructor in English and history, Northampton, Mass., High school, 1921–23; associate professor, Boston university Summer school, 1926 and 1928. Public speaking, coach of debating, University of New Hampshire, 1923–25; director of dramatics, 1923–. Instructor in English, University of New Hampshire, 1923–24; assistant professor of English, 1924–28. Present position, 1928–

HEPLER, JESSE R., *Associate Professor of Horticulture and Associate Horticulturist of the Experiment Station*
B.S., Pennsylvania State college, 1911; M.S., University of Wisconsin, 1922; instructor and graduate student in horticulture, University of Wisconsin, 1912–16. Assistant professor of horticulture and assistant horticulturist of the Experiment station, University of New Hampshire, 1917–31. Present position, 1931–

HERR, CLARENCE S., *Assistant Extension Forester*
B.S., Pennsylvania State college, 1925; M.S., Harvard, 1930. Assistant county agent in Coos and Grafton counties, University of New Hampshire, 1928–36; acting extension forester, April–June, 1935. Present position, 1936–

HICKEY, JOSEPH W., *Graduate Assistant in Chemistry*
B.S., University of New Hampshire, 1937. Present position, 1937–

HIGGINS, LEROY J., *Assistant Professor of Agronomy and Assistant Agronomist of the Experiment Station*
B.S., University of New Hampshire, 1923. Submaster and teacher of agriculture, Walpole, N. H., High school, 1923–25; headmaster and teacher of agriculture, Sunapee, N. H., High school, 1925–27. Instructor in agronomy, University of New Hampshire, 1927–28. Headmaster, Pittsburg, N. H., High school, 1928–29. Instructor in agronomy and assistant agronomist of the Experiment station, University of New Hampshire, 1929–32. Present position, 1932–

HILL, HAZEL E., *Extension Specialist in Clothing*
B.S. in Educ., Framingham State Teachers' college, 1928. Teacher, junior high school, high school and evening practical arts school, East Douglas, Mass., 1920–22 and Chicopee, Mass., 1922–26. Present position, 1928–

HITCHCOCK, LEON W., *Professor of Electrical Engineering*
B.S., Worcester Polytechnic institute, 1908. Engaged in industrial electrical engineering, 1908–14; Revising and writing courses in electrical railways, practical electricity, electrical transmission and practical mathematics, with the department of university extension, Massachusetts State board of education, 1916–17; head instructor, electricians' division, New Hampshire college, United States army training detachment, 1918. Instructor in electrical engineering, New Hampshire college, 1910–12; assistant professor, 1912–18; associate professor, 1918–21. Present position, 1921–

HOBAN, MARGARET R., *Assistant Professor and Director of Physical Education for Women*
B.S., Boston university, 1931; graduate of Sargent School for Physical Education, 1925; Roger's School of Dramatic Art, 1927. Instructor, Hannah More academy, 1925–27; instructor and director of physical education for women, Thiel college, 1927–30. Director, Camp Marlyn for girls, 1931–. Present position, 1931–

HOBBY, IRVING R., *Instructor in Political Science*
B.B.A., College of Business Administration, Boston university, 1922. Instructor in marketing, Boston university, 1921–25; instructor, Phillips-Andover academy, 1925–26; high school teacher, Middleboro, Mass., 1927–28; Cranston, Rhode Island, 1928–29; Rutland, Vermont, 1930–36; managing director, Fisk Rubber company, Berlin, Germany; head of merchandising service department, Flint Daily Journal, Flint, Michigan; field manager, General Service company, Boston. Instructor in economics, University of New Hampshire, 1936–37. Present position, 1937–

HODGDON, ALBION R., *Instructor in Botany*
B.S., University of New Hampshire, 1930; M.S., *ibid.*, 1932; Ph.D., Harvard university, 1936. Graduate assistant in botany, University

of New Hampshire, 1930–32; assistant in botany and biology, Harvard university and Radcliffe college, 1932–36. Present position, 1936–

HOITT, SAMUEL W., *Assistant State Leader, Boys' and Girls' Club Work*
B.S., University of New Hampshire, 1928; M.S., *ibid.*, 1931. Graduate assistant in agricultural economics in the Experiment station, University of New Hampshire, 1929–31; assistant Boys' and Girls' club agent in Rockingham county, 1931–35. Present position, 1935–

HOLDEN, EDWARD W., *Agricultural Agent in Merrimack County*
B.S., University of Maine, 1923. Agricultural agent, Strafford county, University of New Hampshire Extension service, 1923–24. Present position, 1924–

HOOVER, EARL E., *Assistant Professor of Economic Zoölogy*
B.S., Lebanon Valley college, 1934. Instructor, Johns Hopkins university, 1934–35; field zoölogist, U. S. department of the interior, in charge of New England region, 1935; biologist, New Hampshire Fish and Game commission, 1936–. Present position, 1938–

HOUSTON, NORMAN J., *Research Assistant in the Engineering Experiment Station*
B.S., University of New Hampshire, 1930. Estimator and draughtsman, Caughey & Pratt, Antrim, N. H., 1930–31; first lieutenant CA-Res., 6th CCC district, Camp Charles M. Smith, Waterbury, Vermont, 1935–36; foreman, Littleton Construction company, Littleton, N. H., 1937. Present position, 1937–

HOWES, HORACE L., *Professor of Physics*
B.S., Syracuse university, 1905; Ph.D., Cornell university, 1915. Instructor in Physics, Cook academy, Montour Falls, New York, 1905–10. Research assistant, Carnegie institution of Washington, 1915–18. Summer research work with Professor Nichols of Cornell on fluorescent radiation, 1918–30. Present position, 1918–

HUDDLESTON, ERIC T., *Professor of Architecture and Supervising Architect of the University*
B.Arch., Cornell university, 1910. Postle and Fisher, Chicago, 1910; S. Cronin, architect, Chicago, 1911; American Terra Cotta company, Chicago, 1911; Pretzinger and Musselman, architects, Dayton, Ohio, 1912–13; Schenk and Williams, architects, Dayton, 1914. Professor of Architecture, University of New Hampshire, 1914; supervising architect, University of New Hampshire, 1919. Present position, 1919–

HUDON, LILLIAN B., *Acting Manager of the University Dining Hall and Instructor in Home Economics*
B.S., University of New Hampshire, 1926. Teacher of home economics, St. Faith's school, Saratoga Springs, 1926–29; teacher of Latin and history, *ibid.*, 1927–29. Assistant manager of the university dining hall, University of New Hampshire, 1929–37. Present position, 1937–

IDDLES, HAROLD A., *Professor of Chemistry*
B.S., Michigan State college, 1918; M.S., University of Iowa, 1921; Ph.D., Columbia university, 1925. Instructor in chemistry, Michigan State college, 1918–20; research assistant in organic chemistry, University of Iowa, 1920–22; instructor in organic chemistry, Columbia university, 1922–29. University of Graz, Austria, summer of 1926. Cutting traveling fellow, research work at University of Manchester, England, and University of Munich, Germany, 1927–28. Present position, 1929–

JACKSON, ALMA D., *Associate Professor of Zoölogy*
DePauw university, 1903–05; B.A., Ohio State university, 1907; M.A., *ibid.*, 1908. Assistant in the department of zoölogy, New Hampshire college, 1908–12; instructor in zoölogy, 1917–26; assistant professor of zoölogy, 1926–29. Present position, 1929–

JACKSON, C. FLOYD, *Dean of the College of Liberal Arts and Professor of Zoölogy*
B.A., DePauw university, 1905; M.S., Ohio State university, 1906. Instructor, DePauw university, 1904–05; fellow, Ohio State university, 1905–07. Instructor in entomology, New Hampshire college, 1908–09; assistant professor of entomology and zoölogy, 1909–10; professor of zoölogy and entomology, 1910–17; professor of zoölogy, 1917–30. Present position, 1930–

JACKSON, FREDERICK D., *Assistant Professor of Electrical Engineering*
B.S., Pennsylvania State college, 1920. Western Electric company, New York, 1920–21; instructor in School of Electrical Engineering, Cornell university, 1921–23; radio engineering department of the General Electric company, 1923–24; Philadelphia Electric company, summer 1922; American Telephone and Telegraph company, long lines department, Philadelphia, summer 1925; General Electric company, summer 1929; New England Telephone and Telegraph company, summer 1930. Instructor in electrical engineering, University of New Hampshire, 1924–27. Present position, 1927–

JAREST, JOSEPH R., *Research Assistant in the Engineering Experiment Station*
B.S., University of New Hampshire, 1934. Present position, 1937–

JEWETT, IRENE E., *Assistant Boys' and Girls' Club Agent in Grafton County*
B.E., Keene Normal school, 1932. Teacher, Monroe, New Hampshire, 1932–34. Present position, 1934–

JOHNSON, ARTHUR W., *Associate Professor of Economics*
Bay Path institute, Normal department, Springfield, Mass.; B.B.A., College of Business Administration, Boston university; M.B.A., *ibid.*, 1929. Certified public accountant, New Hampshire; head of commercial department, Oldtown High school, Oldtown, Maine, 1915–16; head of accounting department, Bay Path institute, 1916–17; instruc-

tor in accounting and business mathematics, Medford, Mass., high school, 1917–20; special instructor of accounting, College of Business Administration, Boston university, evening division, 1930–31; secretary-treasurer, State Board of Accountancy, New Hampshire. Instructor in economics, New Hampshire college, 1920–21; assistant professor of economics, 1921–27. Present position, 1927–

JOHNSON, GIBSON R., *Assistant Professor of History*
A.B., Muskingum college, 1916; M.A., Princeton university, 1920; Ph.D., Edinburgh university, 1922. Graduate study, University of Berlin, summer of 1921. Associate and professor of religion, Muskingum college, 1922–29; dean of School of Religion, Parsons college, 1929–32. Present position, 1932–

JONES, ARTHUR W., *Assistant Professor of History*
Ph.B., Dennison university, 1920; M.A., Ohio State university, 1923. Graduate work, Harvard university, 1925–26. Principal, Everly High school, Everly, Iowa, 1921–22; instructor, European history, Ohio State university, 1923–25; instructor, Bureau of University Travel—in Europe, 1926–. Present position, 1926–. Leave of absence, 1937–38

JUSTICE, CHARLES M., *Instructor in Physical Education and Athletics*
B.A., University of Nebraska, 1932. Science instructor, director of athletics and coach, Cambridge, Nebraska, high school, 1932–34; head football coach, director of intramural sports, track coach, assistant commandant of cadet regiment, and physical education instructor, Central High school, Omaha, Nebraska, 1934–37. Present position, 1937–

KALIJARVI, THORSTEN V., *Professor of Political Science*
A.B., Clark university, 1920; A.M., *ibid.*, 1923; Ph.D., University of Berlin, 1935. Graduate work, Carnegie Endowment fellow, School of Arts and Sciences, Harvard university, 1920–22. Attended Hague Academy of International Law and Geneva School of International Relations, summer of 1929. Conducted Manchester public forum, February–April, 1937. Instructor in modern languages, University of New Hampshire, 1923–24; instructor in history and political science, 1924–25; assistant professor of history and political science, 1925–27; assistant professor and acting head of the department of political science, 1927–28; associate professor of political science, 1928–37. Present position, 1937–

KARR, MARGARET, *Instructor in Home Economics*
B.S., University of Maryland, 1930; M.A., Mills college, 1932. Fellowship in the department of child development, Mills college, 1931–32. Instructor in department of child development, Mills college, 1932–35; and summer schools of 1935, 36, *ibid.* Research assistant, Fels Research institute, Antioch college. Present position, 1937–

KELLEY, RUTH B., *Library Assistant*
B.A., University of New Hampshire, 1937. Present position, 1937–

KENDALL, JOHN C., *Director of the Experiment Station and Extension Service*
B.S., New Hampshire college, 1902; Instructor and assistant professor of dairy husbandry, North Carolina State college, 1902–07; Kansas State dairy commissioner, 1907–08; professor of dairy husbandry, Kansas State Agricultural college, 1908–10. Director, New Hampshire Agricultural Experiment station, 1910–. Director of Extension service, 1911–

KICHLINE, WILLIAM L., *Instructor in Mathematics*
B.A., Lehigh university, 1924; M.S., *ibid.*, 1928. Assistant in mathematics, Lehigh university, 1924–28; instructor in mathematics, *ibid.*, 1928–31. Present position, 1931–

LAMOUREUX, LUCILLE L., *Graduate Assistant in Languages*
A.B., Regis college, 1936; Junior year, Sorbonne, Paris, France, receiving Diplôme de Civilisation Française, Cours Supérieur, Diplôme de Langue Française. Teacher of French, Miss Vining's Country Day school, Winter Haven, Florida, 1936–37. Present position, 1937–

LASH, MABEL A., *Home Demonstration Agent in Merrimack County*
B.S., Simmons college, 1933. Clerk, one year; laboratory technician, Manchester Dairy system, one year. Present position, 1935–

LATIMER, L. PHELPS, *Assistant Professor of Horticulture and Assistant Horticulturist of the Experiment Station*
B.S., University of California, 1921; M.S., *ibid.*, 1922; Ph.D., *ibid.*, 1926. Graduate assistant in pomology, University of California, 1922–26. Instructor in horticulture and assistant horticulturist of the Experiment station, University of New Hampshire, 1926–28. Present position, 1928–

LATON, THOMAS J., *Assistant Professor of Mechanical Engineering*
B.S., New Hampshire college, 1904. Research in turbine work, General Electric company, Lynn, Mass., 1904–06; commercial turbine work, General Electric company, 1906–07; summers of 1918 and 1920 with National Woodworking Machine company, Dover, New Hampshire; summer of 1930 with Kidder Press company, Dover, New Hampshire. Instructor in drawing, New Hampshire college, 1907–18; assistant professor of drawing, 1918–25. Present position, 1925–

LEAVITT, HAROLD I., *Instructor in Physics*
B.S., New Hampshire college, 1921; M.Ed., *ibid.*, 1936. Graduate student's course, Westinghouse Electric and Manufacturing company, 1921–22; commercial engineer, *ibid.*, 1922–26. Present position, 1928–

LITTLE, EARL H., *Instructor in Agricultural Education; State Supervisor and Teacher Trainer, Agricultural Education, State Board of Education*
B.S., University of New Hampshire, 1923; M.S., Cornell university,

1936. Submaster and teacher of vocational agriculture, Hopkinton High school, Contoocook, New Hampshire, 1924–28; Walpole High school, 1928–31. Instructor in agricultural education, University of New Hampshire, 1931–

LITTLEHALE, ALBERT D., *Shepherd, Experiment Station*
Present position, 1907–

LOVEREN, HAROLD W., *Superintendent of Property*
B.S., University of New Hampshire, 1923. Assistant chief engineer, Pacific Mills, Dover, N. H., 1923–26. Present position, 1926–

LUNDHOLM, CARL, *Assistant Professor of Physical Education and Athletics*
B.S., New Hampshire college. 1921. Instructor in American history and director of athletics, Spaulding High school, Barre, Vermont, 1921–24; instructor in American history and director of athletics, Deering High school, Portland, Maine, 1924–28. Acting director, bureau of appointments, University of New Hampshire, April 1–August 31, 1935; instructor in physical education and athletics, *ibid.*, 1928–35. Present position, 1935–

LYFORD, WALTER H., JR., *Assistant in the Soil Survey, Experiment Station*
B.S., University of New Hampshire, 1930; M.S., *ibid.*, 1932. Graduate assistant in chemistry, University of New Hampshire, 1930–32. Present position, 1935–

MACFARLANE, JAMES, *Instructor in Floriculture and Florist of the Experiment Station*
Dr. Bell's Collegiate High, London, 1880. Royal Horticultural Society's Experimental station, 1888. Work in private estates and commercial greenhouses in England, Germany, Belgium, France, Italy and New York, 1888–1915. Present position, 1915–

MACLEOD, ALAN G., *Assistant Economist in Marketing in the Experiment Station and Extension Service*
B.A., University of Saskatchewan, 1927; M.A., *ibid.*, 1929. Graduate student, Harvard university, 1931–33, 1935. Chemist, Canadian Co-operative Wheat Producers, 1929–31; resident observer, Brookings institution, 1933; wheat specialist, Brookings institution, 1934. Present position, 1936–

MACPHEE, GLADYS E., *Instructor in Education*
B.S., Simmons college, 1916; Ed.M., University of New Hampshire, 1936. Social service, Mass., 1916–19; Extension service, Massachusetts, 1919–21; Hampden county improvement league, Springfield, Mass., 1921–23; teacher, Proctor academy, Andover, New Hampshire, 1926–36. Assistant in education, University of New Hampshire, 1936–37. Present position, 1937–

MAGRATH, RAYMOND C., *Treasurer and Business Secretary*
Burdett Business college, 1916. Northfield schools, Northfield,

Mass., 1916–18 and 1919–20. Chief clerk, University of New Hampshire, 1920–23; business secretary, 1923–27. Present position, 1927–

MANTON, ROBERT W., *Director and Associate Professor of Music*
Harvard university, 1918; studied privately the pianoforte and organ under Harris S. Shaw of Boston; composition under Edward B. Hill, Boston, and M. Vincent d'Indy in Paris. Instructor in pianoforte, Mitchell military school, Billerica, Mass.; taught privately piano, harmony, counterpoint, etc., at Boston; organist and choirmaster, Grace Episcopal church, South Boston. Director and instructor in music, University of New Hampshire, 1923–26; assistant professor, 1926–28. Present position, 1928–

MARSDEN, THOMAS H., JR., *Extension Horticulturist in Landscaping*
B.S., University of New Hampshire, 1935. Present position, 1937–

MARSH, WILLIAM F., *General Trainer and Instructor in the Department of Physical Education and Athletics*
Woodlawn school, Worcester, Mass. Track coach and trainer, Iowa State college, 1905; track coach, Colby college, 1908; track coach and trainer, Bowdoin college, 1911; assistant track coach, Amherst college, 1921–22; freshman track coach and assistant trainer, Dartmouth college, 1923–24. Present position, 1926–

MARSTON, PHILIP M., *Assistant Professor of History*
B.A., University of New Hampshire, 1924; M.A., *ibid.*, 1927. Student assistant in education and psychology, University of New Hampshire, 1924; graduate assistant in education, psychology and social science, 1924–25; instructor in social science and sociology, 1925–29; assistant professor of social science and sociology, 1929–30; assistant professor of history and social science, 1930–31. Present position, 1931–

MARTIN, CARL L., *Assistant Professor of Veterinary Science and Veterinarian of the Experiment Station*
B.S., University of New Hampshire, 1925; D.V.M., Ohio State university, 1928. In general practice, Southbridge, Mass., 1928. Present position, 1928–

MASON, CHARLES M., *Assistant Professor of Chemistry*
B.S., University of Arizona, 1928; M.S., *ibid.*, 1929; Ph.D., Yale university, 1932. Present position, 1932–

MCGRAIL, THOMAS H., *Assistant Professor of English*
B.A., University of New Hampshire, 1927; M.A., Cornell University, 1931; Ph.D., *ibid.*, 1936. Graduate assistant in English, University of New Hampshire, 1927–28; instructor in English, 1928–36. Present position, 1936–

MCLAUGHLIN, HELEN F., *Professor of Home Economics*
B.A., University of Wisconsin, 1909; B.S., Simmons college, 1915; M.A., Teachers college, Columbia university, 1925. Home Demon-

stration agent, New Hampshire Extension service, 1917–20; instructor in household science, New Hampshire college, 1920–21; Associate Professor, 1921–23. Present position, 1923–

MEAD, ALDEN H., *Boys' and Girls' Club Agent in Coos County*
B.S., Cornell University, 1928. Assistant club agent, Monroe county, New York, 1929; club agent, Columbia county, New York, 1929; farmer, New Milford, Pennsylvania, 1929–30. Present position, 1930–

MELNICK, CHARLES H., *Assistant in English*
B.A., University of New Hampshire, 1936. Cadet teacher, one term, Haverhill, Mass., high school, 1935–36. Present position, 1937–

MEYERS, THEODORE R., *Assistant Professor of Geology*
B.A., Ohio State university, 1926; M.A., *ibid.*, 1929. Austin fellow, Harvard university, 1931–32. Assistant in geology, Ohio State university, 1924–26; assistant geologist for the geological Survey of Ohio, summers 1925–28; geologist, New Hampshire State highway department, summers of 1935 and 36. Instructor in geology, University of New Hampshire, 1927–34. Present position, 1934–

MILLER, MARVIN A., *Librarian*
B.A., University of North Carolina, 1926; B.S., School of Library Service, Columbia university, 1929. Library assistant, University of North Carolina, 1923–26; English teacher, Leaksville, North Carolina, high school, 1926–27; stack supervisor, New York public library, 1928–29; reference assistant, information desk, New York public library; 1929–32. Present position, 1932–

MILLER, WILBUR H., *Instructor in Chemistry*
B.S., University of New Hampshire, 1936. Graduate assistant in chemistry, University of New Hampshire, 1936–37. Present position, 1937–

MILLS, MARIAN E., *Assistant Professor of Botany*
B.S., Teachers college, Columbia university, 1917; M.A., *ibid.*, 1920. Instructor in science, high school, Montclair, New Jersey, 1915–21; assistant in biology department, Teachers college, 1921–22; associate professor of biology, Kent State Normal college, 1922–27. Present position, 1927–

MOORE, HERBERT C., *Assistant Professor of Dairy Husbandry and Assistant Dairy Husbandman in the Experiment Station*
B.S., Purdue university, 1923; M.S., University of Minnesota, 1925. Instructor in dairying, Rutgers university, 1925–26; chemist, The Paulus Dairy company, Inc., New Brunswick, New Jersey, 1926–28. Instructor in dairy husbandry and assistant dairy husbandman in the Experiment station, University of New Hampshire, 1928–35. Present position, 1935–

MORAN, CLEMENT, *Associate Professor of Physics*
A.B., Defiance college, 1910; M.S., Cornell university, 1935. Instruc-

tor in science and mathematics, Starkey seminary, Lakemont, N. Y., 1910–14; standardizing laboratory of the General Electric company, 1917–19. Instructor in physics, New Hampshire college, 1914–18; assistant professor of physics, 1918–29. Present position, 1929–

MORROW, KENNETH S., *Professor of Dairy Husbandry and Dairy Husbandman of the Experiment Station*
B.S., University of Minnesota, 1918; M.S., *ibid.*, 1925. Operated dairy farm, Minnesota, 1919–24. Assistant dairy husbandman, Clemson college, South Carolina, 1925; associate dairy husbandman, *ibid.*, 1926–28; assistant professor of dairy husbandry and associate dairyman, University of West Virginia, 1928–31; assistant dairy specialist in the Extension service, Rutgers university, 1931–34. Present position, 1934–

NAGHSKI, JOSEPH, *Graduate Assistant in Bacteriology in the Department of Botany in the College of Agriculture and the Experiment Station*
B.S., Cornell University, 1936. Present position, 1936–

NULSEN, WILLIAM B., M.S., *Assistant Professor of Electrical Engineering*
B.S., California Institute of Technology, 1918; M.S., University of New Hampshire, 1930. General Electric company, Schenectady, New York, 1918–26. Instructor in electrical engineering, University of New Hampshire, 1926–29. Present position, 1929–

OBERLANDER, ANDREW J., *University Physician*
B.S., Dartmouth college, 1926; M.D., Yale University, 1933. Assistant professor of physical education and assistant football coach, Ohio State university, 1926–30; head football coach and assistant professor in physical education, Wesleyan university, 1930–33; interne in the University hospitals, Cleveland, Ohio, 1934–35; interne in the department of mental hygiene of the state of New York at Letchworth village, 1935–36; private practice, Reading, Mass., 1936–37. Present position, 1938–

O'BRIEN, DANIEL A., *Agricultural Agent in Coos County*
Cornell university, 1913. Agricultural instructor, high school, Little Valley, New York, 1913–17; assistant farm manager, Parish, New York, 1920. Present position, 1920–

O'CONNELL, ELIAS M., *Instructor in Forging*
Graduate, Wentworth institute, course in forging, hardening and tempering, 1923; graduate, two-year course in pattern making, *ibid.*, 1925. Employed as acetylene welder and shop worker for Biddle and Smart of Amesbury, Mass., 1922–23; as pattern maker, 1925–26; electric welder Sullivan Machine company, Claremont, N. H., summers, 1936–37. Present position, 1926–

O'KANE, WALTER C., *Professor of Economic Entomology and Entomologist of the Experiment Station*
B.A., Ohio State university, 1897; M.A., *ibid.*, 1909; D.Sc. (hon.), *ibid.*, 1932. Newspaper and magazine work, 1899–1909; United

States food administration, 1917–18; chairman of board appointed by U. S. Secretary of Agriculture to combat Mediterranean fruit fly in Florida, January–November, 1930. Deputy commissioner of agriculture, State of New Hampshire, 1913–; State nursery inspector, 1915–. Associate professor of entomology and assistant entomologist in the Experiment station, New Hampshire college, 1909–10. Present position, 1910–

PARKER, CLIFFORD S., *Professor of Languages*
A.B., Harvard university, 1912; A.M., *ibid.*, 1914; Ph.D., Columbia university, 1925. Master in French and German, St. Stephens school, 1912–13; instructor in French and German, Union College, 1914–16; master in French and Spanish, Country Day school, Kansas City, Missouri, 1916–17; assistant professor of French, University of Nebraska, 1919–20; instructor in French, Columbia university, 1920–28; associate professor of French, University of Maine, 1928–31. Present position, 1931–

PARMENTER, MIRIAM F., *Home Demonstration Agent in Cheshire County*
B.S.Ed., Framingham State Teachers college, 1937. Teacher, home economics, high school, Holden, Mass., 1921–23; Clarke school for the deaf, Northampton, Mass., 1923–25. Present position, 1925–

PARTRIDGE, ALLAN B., *Assistant Professor of History*
B.A., Clark university, 1922; M.A., *ibid.*, 1923. Master in the Holderness school, 1923–25. Instructor in history and political science, University of New Hampshire, 1925–29. Present position, 1929–

PERCIVAL, GORDON P., *Assistant Chemist in Agricultural and Biological Chemistry in the Experiment Station*
B.S., Massachusetts Agricultural college, 1924; M.S., *ibid.*, 1926. Graduate assistant, Massachusetts Agricultural college, 1924–26. Present position, 1926–

PERKINS, DONALD M., *Instructor in Mathematics*
B.S., University of New Hampshire, 1931; M.S., *ibid.*, 1933. Graduate assistant, University of New Hampshire, 1931–33. Present position, 1933–

PERKINS, LILLIAN R., *Assistant, Library*
B.A., University of Oklahoma, 1933. Present position, 1934–

PERRETON, ARNOLD, *Assistant Professor of Architecture*
B.Arch., Carnegie Institute of Technology, 1927. One year of travel and study in Europe. Two years with Janssen & Cocken, architects, Pittsburgh. Instructor in architecture, University of New Hampshire, 1928–31. Present position, 1931–

PERRY, ERROL C., *Agricultural Agent for Carroll County*
B.S., Massachusetts Agricultural college, 1919. Tester for cow test associations, laborer and herdsman, Claremont, Lebanon and Hooksett, New Hampshire, 1920–29. Present position, 1929–

PHELPS, WILLARD B., *Instructor in Geology*
B.S., University of New Hampshire, 1934; M.A., Ohio State university, 1936. Graduate assistant in geology, Ohio State university, 1934–36; research geologist, *ibid.*, 1936–37. Assistant in geology, University of New Hampshire, September 1, 1937–January 31, 1938. Present position, February 1, 1938–

PHILLIPS, THOMAS G., *Professor of Agricultural and Biological Chemistry and Chemist of the Experiment Station*
B.S., Ohio State university, 1912; M.S., *ibid.*, 1913; Ph.D., University of Chicago, 1918. Instructor to professor, department of agricultural chemistry, Ohio State university, 1912–25. Present position, 1925–

PIERCE, DOROTHY, *Graduate Assistant in the Department of Physical Education for Women*
B.S. in Phys. Educ., Sargent School for Physical Education, Boston university, School of Education, 1937. N.Y.A. supervisor, playgrounds, Leominster, Mass. Present position, 1937–

PIERCE, ELWOOD C., *Graduate Assistant in Agricultural and Biological Chemistry*
B.S., Ohio State university, 1937. Present position, 1937–

PIERCE, EVERETT W., *Agricultural Agent in Hillsborough County*
B.S., Cornell university, 1923. Assistant county agent, Ontario county, New York, 1923. Present position, 1923–

POTTER, GEORGE F., *Professor of Horticulture and Horticulturist of the Experiment Station*
B.S., University of Wisconsin, 1913; M.S., *ibid.*, 1916; Ph.D., Cornell, 1930. Instructor in horticulture, University of Wisconsin, 1913–18; assistant professor of horticulture, *ibid.*, 1918–20. Present position, 1920–

POWERS, WENDELL H., *Graduate Assistant in Chemistry*
B.S., Middlebury college, 1937. Present position, 1937–

PRINCE, FORD S., *Professor of Agronomy and Agronomist of the Experiment Station*
B.S., University of Illinois, 1913. Instructor in soils, Michigan Agricultural college, 1913–14; instructor and assistant professor of agronomy, New Hampshire college, 1914–18; county agricultural agent, Xenia, Ohio, 1918–25. Associate agronomist and extension specialist in soils and crops, University of New Hampshire, 1925–32; associate professor of agronomy, associate agronomist of the Experiment station, and specialist in soils and crops in the Extension service, 1932–35; associate professor of agronomy and associate agronomist of the Experiment station, 1935–36; professor of agronomy and associate agronomist of the Experiment station, 1936–37. Present position, 1937–. Leave of absence, June 1–September 30, 1938

PRINDLE, GEORGE L., *Major, Infantry, Assistant Professor of Military Science and Tactics*
B.S., Connecticut State college, 1917. Appointed second lieutenant, infantry, Officers Reserve corps, August 15, 1917; promoted to first lieutenant, National Army, March 23, 1918; honorably discharged, September 29, 1919; appointed first lieutenant, regular army, July 1, 1920; promoted to captain, as of same date; promoted to major, August 1, 1935; graduate of company officers course, the Infantry school, Fort Benning, Georgia, 1923. Present position, 1936–

PURDY, WILFRED G., *Boys' and Girls' Club Agent in Merrimack County*
B.S., Massachusetts State college; M.S., Ohio State university. Fifteen years of practical farming; foreman, Ann Arbor, one year; teacher, Merrimac, Mass., 1934–35. Assistant Boys' and Girls' club agent in Merrimack county, University of New Hampshire Extension service, 1935–36. Present position, 1936–

PURINGTON, JAMES A., *Agricultural Agent in Rockingham County*
B.S., New Hampshire college, 1916; M.S., Massachusetts Agricultural college, 1920. Boys' and Girls' club agent, Cheshire county, 1920–22. Present position, 1922–

PUTNEY, EDWARD W., *Colonel, Coast Artillery Corps, U. S. A., Professor of Military Science and Tactics*
B.S., United States Military academy, West Point, 1908. Instructor, U. S. Military academy, 1912–16; instructor, director, assistant commandant, Army Heavy Artillery school, A.E.F., France, 1918; professor of military science and tactics, Rensselaer Polytechnic institute, 1919; assistant professor of military science and tactics, Massachusetts Institute of Technology, 1919–23. Graduate, advanced course, Coast Artillery school, Fort Monroe, Virginia, 1924; Graduate, Command and General Staff school, Fort Leavenworth, Kansas, 1925; Graduate, Army War college, Washington, D. C., 1931. Present position, 1931–

RAFFERTY, TERRENCE J., *Assistant in Languages*
B.A., University of New Hampshire, 1934; M.A., *ibid.*, 1937. Graduate assistant in languages, University of New Hampshire, 1935–37. Present position, 1937–

RATH, EDWIN R., *Industrial Research Engineer, Engineering Experiment Station*
B.S., University of Pittsburgh, 1917; E.E., *ibid.*, 1921. Apprenticeship course, H. L. Doherty Co., Denver, 1917–18; instructor in electrical engineering, University of Pittsburgh, 1918–20; professor of mathematics and physics, St. Vincents college, Latrobe, Pennsylvania, 1919–25; assistant professor of electrical engineering, University of Pittsburgh, 1921–23; associate professor, *ibid.*, 1924–26; manager of railway department, The Philip Carey company, Cincinnati, Ohio, 1926–28; manager of the electrical division, *ibid.*, 1928–29; manager of elastite flooring department, *ibid.*, 1929–30; assistant to vice-president

and manager, insulation department, *ibid.*, 1930–32. Present position, 1932–

RAWLINGS, CECIL O., *Extension Horticulturist*
B.S., University of Illinois, 1925. U.S.D.A., Illinois, Florida and Georgia, 1925–26; horticultural agent, St. Louis and Southwestern railway, 1926–30. Present position, 1930–

RHOME, MARGARET K., *Graduate Assistant in History*
B.A., University of New Hampshire, 1935. Teacher, Jefferson, N. H. high school, 1935–37. Present position, 1937–

RICE, UNA A., *Home Demonstration Agent in Grafton County*
B.S., Teachers college, Columbia university, 1927. Nasson institute, 1914–16. Teacher, home economics, Maine, New Hampshire, Vermont and Massachusetts, 1916–29. Present position, 1929–

RICHARDS, ALFRED E., *Professor of English*
A.B., Yale university, 1898; A.M., *ibid.*, 1900; Ph.D., University of Munich, Germany, 1904. Instructor in English and history, Winsted, Connecticut, 1900–01; instructor in modern languages, Lehigh university, 1904–05; instructor in German, Princeton university, 1905–11; instructor in English, University of Washington, 1911–12. Present position, 1912–

RICHARDSON, EDYTHE T., *Assistant Professor of Zoölogy*
B.S., New Hampshire college, 1922; M.S., *ibid.*, 1924. Graduate assistant in zoölogy, New Hampshire college, 1922–24; instructor in zoölogy, 1924–29. Present position, 1929–

RITZMAN, ERNEST G., *Research Professor in Animal Husbandry in the Experiment Station*
B.S.A., Iowa State college, 1903; M.S. (hon.), University of New Hampshire, 1928. With bureau of animal industry, U. S. department of agriculture, 1903–08; animal husbandman, Porto Rico Agricultural Experiment station, 1908–15; research associate, Carnegie Institution of Washington, 1934. Present position, 1915–

ROBINSON, EARL P., *County Agent Leader in the Extension Service*
B.S., Michigan Agricultural college, 1907. Teacher, Northwood Center, N. H., 1907–08; agriculturist for Indiana Sugar company, 1912; county agricultural agent, Saginaw county, Michigan, 1913–17; assistant state leader, Michigan, 1917–18. Rural rehabilitation unit of federal relief administration, Washington, 1934. State executive officer, agricultural conservation program, 1936. Present position, 1919–

ROGERS, WARREN H., *County Agricultural Agent at Large*
B.S., University of New Hampshire, 1935. Present position, 1935–

ROPER, ELIZABETH R., *Boys' and Girls' Club Agent in Strafford County*
B.A., University of New Hampshire, 1928. Present position, 1928–

ROWELL, BARBARA, *Assistant in English*
B.A., University of New Hampshire, 1933. Cadet teacher, Bristol high school, one term, 1932–33. Part-time graduate student, University of New Hampshire, 1933–34 and 1936–37. Present position, 1934–

RUDD, HERBERT F., *Professor of Philosophy*
A.B., Central college, Iowa, 1900; B.D., University of Chicago, 1903; M.A., *ibid.*, 1913; Ph.D., *ibid.*, 1914. Principal of Munroe academy, Suifu, West China, 1906–08; general mission work, Nigyuanfu, 1909–14; lecturer on problems of China, University of Chicago, 1914; supervisor of mission schools, Suifu, 1914–16; principal of Munroe academy, 1916–17; professor of education and psychology, West China university, Chengtu, 1918–19; dean of department of education, West China university, 1920–21; special work, Columbia university and University of Chicago, 1921–22. Associate professor of education and psychology, New Hampshire college, 1922–25; professor of philosophy and psychology, 1925–34. Present position, 1934–

SANBORN, MARY L., *Assistant State Boys' and Girls' Club Leader, Extension Service*
Oread institute, Worcester, Mass., 1914; Teachers college, Columbia university, 1914–15. Teacher: Westerly, Rhode Island; Seekonk, Massachusetts; and New Hampshire, 1904–1914. Present position 1915–

SAUER, GEORGE H., *Assistant Professor of Physical Education and Athletics*
B.S., University of Nebraska, 1934. Coached freshman football and basketball teams, University of Nebraska, 1934; played professional football with the Green Bay Packers, 1935–36; employed by General Foods, 1937. Present position, 1937–

SCHOEDINGER, PAUL S., *Assistant Professor of English*
A.B., Princeton University, 1920; M.A., Ohio State university, 1921. Instructor in English, Ohio State university, 1921–22. Instructor in English, University of New Hampshire, 1926–29. Present position, 1929–

SCHOOLCRAFT, JAMES T., JR., *Instructor in Languages*
B.S., Union college, 1923; Abgangs-Zeugnis, Heidelberg university, 1924; A.M., Columbia university, 1926. Teacher: Columbia university, fall term, 1924; Hunter college, winter term, 1925–26; University of Manitoba, 1927–30; The Phillips Exeter academy, 1931–34. Present position, 1936–

SCRIPTURE, PAUL N., *Assistant in the Soil Survey, Experiment Station*
B.S., University of New Hampshire, 1934. Laboratory assistant in agricultural and biological chemistry, University of New Hampshire, 1934–35. Present position, 1935–

SCUDDER, HAROLD H., *Professor of English*
B.S., Dartmouth college, 1903. Assistant to chemist, New Hampshire State Experiment station, 1903–04. Newspaper work in New England and the Pacific Northwest, 1904–13. In charge of publicity, New Hampshire college, 1913–23. Publicity director Federal Food administration for New Hampshire, 1918. Instructor in English, New Hampshire college, 1913–14; assistant professor, 1914–18; Faculty Boston university Summer session, 1917; associate professor, 1918–28; Faculty University of Maine Summer session, 1930; study at Cambridge university, England, 1936. Present position, 1928–

SHEEHAN, ELEANOR L., *Instructor in Zoölogy*
B.S., University of New Hampshire, 1930; M.S., *ibid.*, 1931. Graduate assistant in zoölogy, University of New Hampshire, 1930–31; assistant in zoölogy, Barnard college, Columbia university, 1931–32; instructor, Adelphi college, 1932–33. Assistant in zoölogy, University of New Hampshire, 1933–35. Present position, 1935–

SHIMER, STANLEY R., *Assistant Professor of Agricultural and Biological Chemistry and Chemist of the Experiment Station*
B.S., Muhlenberg college, 1918; M.S., Pennsylvania State college, 1923. Graduate study, Cornell university, 1929–30. Instructor in Science, high school, Lansdale, Pennsylvania, 1918–19; head of chemistry department, State Normal school, East Stroudsburg, Pennsylvania, 1919–20; head of physics department, Battin high school, Elizabeth, New Jersey, 1920–21; instructor in physiological chemistry, medical department, Temple university, 1921–22; graduate assistant in chemistry, University of Illinois, 1923–24. Instructor in agricultural and biological chemistry and assistant chemist of the experiment station, University of New Hampshire, 1924–28. Present position, 1928–

SILCOX, HERBERT E., *Graduate Assistant in Chemistry*
B.S., University of New Hampshire, 1936. Employed by F. E. Jewett company, Lowell, Mass., 1936–37. Present position, 1937–

SKELTON, RUSSELL R., *Associate Professor of Civil Engineering*
B.S. in civil engineering, Purdue university, 1923; C.E., *ibid.*, 1934. Highway engineer, Illinois Highway department, 1923–26; assistant engineer, bridge department of Southern railway system, 1926–28. Instructor in civil engineering, University of New Hampshire, 1928–30; assistant professor of civil engineering, 1930–35. Present position, 1935–

SLANETZ, LAWRENCE W., *Instructor in Bacteriology, Department of Botany, and Assistant in Bacteriology in the Experiment Station*
B.S., Connecticut State college, 1929; Ph.D., Yale university, 1932. Assistant instructor, Yale university, 1931–32. Instructor in bacteriology, department of botany, University of New Hampshire, 1932–34. Present position, 1934–

SLOBIN, HERMON L., *Dean of the Graduate School and Professor of Mathematics*

A.B., Clark university, 1905; Ph.D., *ibid.*, 1908. Instructor, Michigan State college, 1908–09; instructor and assistant professor, University of Minnesota, 1908–18. Study at Cambridge university, England, and in Europe, 1932. Director of the University of New Hampshire Summer school, 1922–27; acting director, 1933; director, 1934–37. Director of the Graduate school, 1928–30; dean of the Graduate school, 1930–. Professor of Mathematics, 1919–. Present position, 1930–

SMITH, GRACE H., *Home Demonstration Agent in Strafford County*

B.S., Cornell university, 1921. New York State College for Teachers, 1917–18. Assistant home demonstration agent, Suffolk county, New York, 1921–22; home demonstration agent, Cayuga county, New York, 1922–25, and in Herkimer county, New York, 1925–33. Present position, 1933–

SMITH, HARRY W., *Professor of Economics*

A.B., Hamilton college, 1908; A.M., *ibid.*, 1912; A.M., Columbia university, 1920; Auburn Theological seminary, 1911. Summer 1926, studied, in Europe, international economic and political cooperation under appointment of Carnegie Endowment for International Peace. For three summers member of School of Politics at Williams college. State supervisor of workers' education, W.P.A., 1936–37. Professor of oratory and economics, Dubuque college and seminary, 1918–20. Present position, 1920–

SMITH, LUCINDA P., *Associate Professor of English*

A.B., Colby college, 1901; M.A., Boston University, 1934. Taught in Massachusetts high schools, 1901–05; Dover, New Hampshire, high school, 1905–13. Instructor in English, New Hampshire college, 1919–26; Assistant professor of English, 1926–29. Present position, 1929–

SMITH, MELVIN M., *Associate Professor of Chemistry*

A.B., Colby college, 1890; A.M., *ibid.*, 1893. Submaster, 1898–1911 and headmaster 1911–16, Dover, New Hampshire, high school. Instructor in chemistry, New Hampshire college, 1917–21; Assistant professor of Chemistry, 1921–30. Present position, 1930–

SMITH, ROYAL W., *Agricultural Agent in Belknap County*

B.S., University of New Hampshire, 1928. Agricultural agent in Carroll county, University of New Hampshire Extension service, 1928–29. Present position, 1929–

SMITH, TODD O., *Associate Chemist of the Experiment Station*

A.B., Indiana university, 1910; M.S., New Hampshire college, 1917. Assistant chemist, New Hampshire Agricultural Experiment station, 1910–21. Present position, 1921–

SMITH, WILLIAM W., *Research Assistant in Horticulture in the Experiment Station*

B.S., University of New Hampshire, 1924; M.S., *ibid.*, 1929; Ph.D., Michigan State college, 1935. Graduate assistant, Michigan State college, 1929–33; research assistant, *ibid.*, 1933–36. Present position, 1936–

SOLT, MARVIN R., *Assistant Professor of Mathematics*

B.S., Lehigh university, 1918; M.S., *ibid.*, 1925. Instructor, Mercersburgh academy, 1918–19; instructor in mathematics at Lehigh university, 1919–26. Instructor in mathematics, University of New Hampshire, 1926–29. Present position, 1929–. Leave of absence, 1938–39

STARKE, RAYMOND R., *Assistant Professor of Physics*

A.B., Boston university, 1921; A.M., Harvard university, 1926. Instructor in physics, University of New Hampshire, 1921–24; assistant in physics, Harvard university, 1924–26. Instructor in physics, University of New Hampshire, 1926–28. Present position, 1928–. Leave of absence, second semester, 1937–38

STEVENS, CLARK L., *Associate Professor of Forestry and Associate Forester in the Experiment Station*

B.S., New Hampshire college, 1917; M.F., Yale university, 1926; Ph.D., *ibid.*, 1930. Assistant in forestry, New Hampshire college, 1919, 1920–21; instructor in forestry, 1921; assistant professor of forestry, 1922–25; assistant professor of forestry and assistant forester of the Experiment station, 1925–37. Present position, 1937–

STEVENS, HENRY B., *Executive Secretary, Experiment Station and Extension Service*

A.B., Dartmouth college, 1912. Student, folk-play and folk-schools, Europe, 1934. Assistant editor, Woman's Journal and Suffrage News, 1912–13; associate editor, 1914–17. Present position, 1918–

STOLWORTHY, E. HOWARD, *Assistant Professor of Mechanical Engineering*

B.S., Tufts college, 1922. Professional experience: design and installation of steam power and heating equipment. Instructor in mechanical engineering, University of New Hampshire, 1922–29. Present position, 1929–

STOLWORTHY, MARION J., *Instructor in Home Economics*

Graduate, State Normal school, Framingham, Mass., 1924. Practice teacher, Newtonville Vocational high school, 1924; teacher, home economics and French, Newmarket high school, 1925. Assistant dietitian, Commons dining hall, 1927; substitute teacher, Robinson seminary, 1927. Present position, 1927–

STONE, SAMUEL A., *Instructor in Mathematics*

B.S., University of New Hampshire, 1936; M.S., *ibid.*, 1937. Present position, 1937–

STOWE, A. MONROE, *Professor of Education*
Ph.B., Northwestern university, 1903; A.M., *ibid.*, 1904; A.M., Harvard university, 1905; Ph.D., Columbia university, 1909. Secondary school work, four years; associate professor of education, Kansas State Teachers college, 1909–12; director of training, State Normal school, Whitewater, Wisconsin, 1912–13; acting professor of education, DePauw university, 1913–14; President, University of City of Toledo, 1914–25; research, 1925–26; professor of education, Randolph-Macon Woman's college, 1926–34; visiting professor, Duke university summer school, 1927–34, 37. Present position, 1934–

SWAIN, LEWIS C., *Instructor in Forestry and Music*
B.S., New Hampshire college, 1918. Graduate, bandmasters' school, Chaumont, France, 1919. Bandmaster, 318th engineers' band, United States army, 1918–19. Partner in woodworking concern, 1921–26; assistant pathologist, U. S. bureau of plant industry and bureau of entomology and plant quarantine (civil service rating associate pathologist), 1926–36. Instructor in music with the status of bandmaster in the department of military science, University of New Hampshire, 1927–36. Present position, 1936–

SWANTON, DONOVAN, *Major, Infantry, Associate Professor of Military Science and Tactics*
B.S., United States Military academy, 1917. Commanded machine-gun company, 3rd division, A.E.F.; Victory medal, 6 clasps; Silver Star with oak-leaf cluster, 1918. Assistant adjutant, 3rd Division, Army of Occupation, the Rhine, to 1919. Secretary to the general staff, Paris, France, to 1920. Garrison duties, 1920–24. 2nd Corps Area staff, New York, 1924–26. Graduate, Infantry school, Fort Benning, Georgia, 1927. Attached, American embassy, Paris, 1927–28. Special student, the Sorbonne, 1928. Instructor in French and tactics, West Point, 1928–31. Garrison duties, 1931–34. Commanded C.C.C. camps, Bitter Root mountains, Montana and Cumberland mountains, Tennessee, 1933. Present position, 1934–

SWASEY, HENRY C., *Associate Professor of Physical Education and Athletics*
B.S., Amherst college, 1915. Fellow in physical education, Amherst college, 1915–16; instructor in physical education, Fessenden school, West Newton, Mass., 1916–17; instructor in physical education, Adelphia academy, Brooklyn, New York, 1917–18; instructor in physical education, Worcester Polytechnic institute, 1918–21. Assistant professor of physical education for men, New Hampshire college, 1921–26. Present position, 1926–. Leave of absence, first semester, 1938–39

SWEET, PAUL C., *Assistant Professor of Physical Education and Athletics*
B.S., University of Illinois, 1923. Director of athletics and physical education, Elko, Nevada, County high schools, 1923–24. Instructor in physical education and athletics, University of New Hampshire,

1924–27. Present position, 1927–. Leave of absence, second semester, 1937–38

SWONGER, CLAIR W., *Assistant Professor of Economics*
A.B., University of Kansas, 1925; A.M., Harvard university, 1927. Graduate study, Harvard university, 1932–33. Instructor in economics, University of New Hampshire, 1927–33. Present position, 1933–

TAYLOR, FREDERICK W., *Director of the Commercial Departments of the College of Agriculture*
B.S., Ohio State university, 1900. Assistant, Ohio Experiment station, 1900–01; government soil survey for the U. S. department of agriculture, 1901–03. Professor of agronomy and agronomist of the Experiment station, University of New Hampshire, 1903–32; dean of the College of Agriculture, 1915–33; director of the commercial departments of the College of Agriculture and agronomist of the Experiment station, 1933–37. Present position, 1937–

TEPPER, ALBERT E., *Instructor in Poultry Husbandry and Assistant Poultry Husbandman of the Experiment Station*
B.S., Pennsylvania State college, 1928; M.S., University of New Hampshire, 1930. Poultry certification inspector in the Experiment station, 1930–31. Present position, 1931–

THOMAS, GEORGE R., *Assistant Professor of Architecture*
B.Arch., Carnegie Institute of Technology, 1930. European travel and study, June–September, 1933. In employ of architects: Neff and Thompson, Norfolk, Virginia; Parks and Baxter, Washington, D. C. Instructor, history and appreciation of art, Virginia Teachers college (Fredericksburg), summer, 1935. Instructor in architecture, University of New Hampshire, 1930–34. Present position, 1934–

THOMPSON, RUTH E., *Instructor in Zoölogy*
B.S., University of New Hampshire, 1929; M.S., *ibid.*, 1931. Senior assistant in zoölogy, University of New Hampshire, 1928–29; graduate assistant in zoölogy, 1929–31. Present position, 1931–

TINGLEY, MARY A., *Assistant in Horticulture in the Experiment Station*
B.S., University of New Hampshire, 1933; M.S., *ibid.*, 1936. Graduate assistant in horticulture in the Experiment station, University of New Hampshire, 1934–36. Present position, 1936–

TIRRELL, LORING V., *Professor of Animal Husbandry*
B.S., Massachusetts Agricultural college, 1920. Instructor, Massachusetts Agricultural college, 1920–21. Instructor, University of New Hampshire, 1921–25; assistant professor, *ibid.*, 1925. Extension specialist in sheep and livestock, Connecticut Agricultural college, 1926–30. Associate professor of animal husbandry, University of New Hampshire, 1930–36. Present position, 1936–

TONKIN, JOHN C., *Instructor in Machine Shop*
Machinist and toolmaker, 1901–10 (Instructor in machine work and

forging, and mechanician to the laboratories, New Hampshire college, 1910–12. Director of Manual Training, Waltham, Mass., 1912–16; Watertown Arsenal, 1917–20; instructor in Mechanical School of American forces in Germany, 1920–21; foreman in machine shops in Lowell and Boston, 1921–24. Present position, 1924–

TOWLE, CARROLL S., *Assistant Professor of English*
A.B., Bowdoin college, 1922; Ph.D., Yale university, 1933. Instructor, University of Texas, 1923–26. Teaching assistant, Yale university, 1926–29; instructor, Yale university, 1929–31. Present position, 1931–

VIER, DWAYNE T., *Graduate Assistant in Chemistry*
B.S., University of New Hampshire, 1937. Present position, 1937–

WADLEIGH, CLARENCE B., *State Boys' and Girls' Club Leader, Extension Service*
B.S., New Hampshire college, 1918. Institute of cooperation, University of New Hampshire, 1932. 4-H county club leader, New Hampshire college, 1918–19; milk tester, New York State, 1919–20. Acting State club leader, University of New Hampshire, 1920–21. Present position, 1921–

WALSH, JOHN S., *Associate Professor of Languages*
A.B., Harvard university, 1915; M.A., Boston university, 1928. Taught in private and public high schools of Massachusetts and New Jersey. Instructor in languages, University of New Hampshire, 1922–26; assistant professor, 1926–29; acting head of the department, 1929–31. Present position, 1929–

WASHBURN, EMILY, *Reference Librarian*
B.S., Simmons college, school of social work, 1922; Graduate of Pratt Institute Library school, 1934. Teacher, Waynflete Latin school, Portland, Maine, 1922–26; associate general secretary of Y.W.C.A., Portland, Maine, 1926–29; substitute librarian, medical library of Massachusetts General hospital, 1931; librarian of The Joseph Conrad Memorial library, Seamen's Church institute, New York City, 1934–35. Circulation librarian, University of New Hampshire, 1931–33. Present position, 1935–

WEBBER, LAURANCE E., *Research Assistant in the Engineering Experiment Station*
B.S., University of New Hampshire, 1934. Mechanical inspector, U. P. M. Kidder Press company, Inc., 1934–37. Present position, 1937–

WEBSTER, ROBERT G., *Assistant Professor of English*
B.A., University of New Hampshire, 1926; M.A., *ibid.*, 1930. Student, Oxford and Cambridge universities, England, 1934–35. Graduate assistant in English and assistant in publicity, University of New Hampshire, 1927; instructor in English, 1927–36. Present position, 1936–

WELCH, ALBERT G., *Instructor in Mechanical Engineering*
B.S., University of New Hampshire, 1936. Second lieutenant, United States army, 1936–37. Present position, 1937–

WELLS, HOWARD N., *Agricultural Agent in Sullivan County*
Special work, Cornell university, 1907–08, 1914; University of New Hampshire, 1932. Present position, 1914–

WESTGATE, WARREN A., *Research Chemical Assistant in Entomology in the Experiment Station*
B.S., University of New Hampshire, 1928; M.S., *ibid.*, 1929. Present position, 1929–. Leave of absence, Jan. 1938–Jan. 1939 for research, Crop Protection institute.

WESTON, RUTH C., *Boys' and Girls' Club Agent in Belknap County*
B.A., New Hampshire college, 1921. Teacher, Temple, Walpole, and Hancock, New Hampshire. Boys' and Girls' club agent in Cheshire county, University of New Hampshire Extension service, 1929–36; Acting Boys' and Girls' Club agent in Belknap county, 1936–37. Present position, 1937–

WHIPPEN, NORMAN F., *Boys' and Girls' Club Agent in Sullivan County*
B.S., New Hampshire college, 1918. Farmer, Chittenango, New York, 1919–20; milk tester, New York State, 1920; Boys' and Girls' Club agent, Merrimack county, University of New Hampshire Extension service, 1920–23; Boys' and Girls' Club agent, Hampshire County, Massachusetts Agricultural college, 1923–26; Superintendent, Hillside school for Boys, Greenwich, Mass., 1926–27. Present position, 1928–

WHITE, GEORGE W., *Associate Professor of Geology and Assistant to the Dean of the College of Liberal Arts*
B.A., Otterbein college, 1921; M.A., Ohio State university, 1925; Ph.D., *ibid.*, 1933. Assistant geologist, geological survey of Ohio, summers of 1925–30 and 31; geologist, New Hampshire State highway department, summers, 1930, 35. Instructor in geology and mineralogy, University of Tennessee, 1925–26. Instructor in zoölogy and geology, University of New Hampshire, 1926–28; assistant professor of geology, 1928–34. Associate professor of geology, 1934–37. Assistant in the office of the dean of the College of Liberal Arts, July 1–August 31, 1936. Present position, 1937–

WILBUR, WALTER E., *Associate Professor of Mathematics*
B.S., University of Maine, 1908; M.S., *ibid.*, 1911. Instructor in mathematics, University of Maine, 1908–16; instructor in mathematics and science, Lynn Classical high school, 1916–18; Newton Classical high school, 1918–20; instructor in applied mathematics in the General Electric Engineering school, 1920–22. Instructor in mathematics, University of New Hampshire, 1922–26; assistant professor of mathematics, 1926–32. Present position, 1932–

WILLIAMSON, DAISY D., *State Home Demonstration Leader*
B. of H.E., Normal school, Muncie, Indiana, 1917. Normal school, Terre Haute, Indiana; Huntington college, Indiana. Teacher, Mt. Vernon and Sidney, Indiana, 17 years; head of home economics department, Huntington college, 4 years; home demonstration agent, Sullivan county, Indiana, 9 months. Assistant State home demonstration leader, New Hampshire college, 5 months. Present position, 1920–

WILLIAMSON, ELEANOR S., *Home Demonstration Agent in Coos County*
B.E., Keene Normal school. Framingham Normal school. Teacher, home economics, Groveton, New Hampshire, 1932–35. Present position, 1935–

WILSON, STANLEY E., *Assistant in Poultry Improvement and Horticultural Improvement in the Extension Service*
B.S., University of New Hampshire, 1926. Principal, Farwell Grammar school, North Charlestown, N. H., 1926–27. Boys' and Girls' Club agent in Belknap county, University of New Hampshire Extension service, 1927–36. Present position, 1936–

WILSON, W. ROSS, *Agricultural Agent in Grafton County*
B.S., Cornell university, 1912. Instructor in dairying, New Hampshire college, 1912–18. Present position, 1918–

WOOD, FRED W., *Technical Sergeant, Detached Enlisted Men's List, Assistant in Military Science and Tactics*
Enlisted in U. S. Army, 1908; promoted corporal, 1909; foreign service in Panama from 1914; promoted sergeant, 1916; returned to the United States, 1918; R.O.T.C., University of New Hampshire, 1921; promoted staff sergeant, 1924; promoted technical sergeant, 1937.

WOODRUFF, RUTH J., *Dean of Women and Assistant Professor of Economics*
A.B., Bryn Mawr, 1919; A.M., *ibid.*, 1920; Ph.D., Radcliffe, 1931. Assistant superintendent, Foulke and Long institute, Philadelphia, 1917; case worker, American Red Cross, Scranton, Pennsylvania, 1919; counselor, White-Williams foundation, Philadelphia, 1920–22; employment supervisor, public schools, Philadelphia, 1922–28; teacher, Northeast Evening high school, Philadelphia, 1923–28; Social case worker, Children's hospital, Boston, 1930; Social case worker, Massachusetts Memorial hospital, Boston, 1931. Present position, 1931–

WOODWARD, KARL W., *Professor of Forestry and Forester of the Experiment Station*
A.B., Cornell university, 1904; M.F., Yale university, 1904. U. S. Forest service, 1904–15. Present position, 1915–

WOODWORTH, HARRY C., *Agricultural Economist in the Experiment Station and Farm Management Demonstrator in the Extension Service*
B.S., University of Illinois, 1919; M.S., Cornell university, 1916.

Study under social science research fellowship, Harvard university, 1929–30. High school teacher, Wells, Minnesota, 1909–13; County agent, Minnesota, 1913–15; operator stock farm, Wells, Minnesota, 1916–21; regional chief, land use planning section, resettlement administration, 1935–36; Consultant, resettlement administration, 1936–37. Present position, 1921–

YALE, WILLIAM, *Assistant Professor of History*

Ph.B., Sheffield Scientific school, Yale university, 1910; M.A., University of New Hampshire, 1928. Private tutor, 1910–12; Standard Oil company of New York foreign service, 1913–17; special agent, department of state, 1917; American military observer, Egyptian Expeditionary Forces, 1918; expert on Arabian affairs attached to American commission to negotiate peace, 1919; technical advisor to King Crane Committee, 1919; shipping and tourist business, Egypt, 1920–23; lecturing, writing, farming, 1923–27. Instructor in history, University of New Hampshire, 1928–33. Present position, 1933–

MAJOR ADMINISTRATIVE ASSISTANTS

Doris Beane, a.b., *Secretary to the President*
Evelyn H. Brettell, *Secretary to the Dean of the College of Liberal Arts*
Sadie V. Burke, r.n., *Nurse*
Maisie C. Burpee, *Secretary to the Director of the Agricultural Experiment Station and Extension Service*
E. Prescott Campbell, *Accountant, Business Office*
Louise M. Cobb, *House Director, Hetzel Hall*
Arline B. Dame, *House Director, Fairchild Hall*
Esther M. Dunning, *House Director, Congreve Hall*
Mildred M. Flanders, *Secretary to the Dean of the College of Technology*
Elise F. Holt, r.n., *Nurse*
Lillian B. Hudon, b.s., *Acting Manager of the University Dining Hall*
Helen F. Jenkins, *Secretary to the Faculty of the College of Liberal Arts*
Emma M. Kimball, b.s., *Acting Assistant Manager, University Dining Hall*
Elizabeth B. Knowlton, *House Director, Commons*
Helen H. Latimer, *Gas Analyst, Agricultural Experiment Station*
Fedora L. Lessard, r.n., *Nurse*
Elizabeth E. McFadden, *Secretary to the Dean of the College of Agriculture*
Elizabeth E. Mehaffey, *Assistant Librarian and Mailing Clerk, Agricultural Experiment Station*
Alberta R. Morrill, b.a., *Secretary to the Dean of Men*
John P. Neville, b.a., *Assistant Agricultural Editor*
May E. Phipps, b.s. in Educ., *House Director, Smith Hall*
Beatrice M. Richmond, *Cashier, Business Office*
Betty G. Sanborn, *Secretary to the Director of Commercial Departments, College of Agriculture and Seed Analyst*
Marcia N. Sanders, *House Director, Scott Hall*
Annie L. Sawyer, *Matron, Hood House*
John W. Spaven, b.s., *Executive Assistant, Extension Service*
Gladys Tasker, *Assistant Registrar*
Christine I. Warren, b.s., *Secretary to the Officer in Charge of Freshmen and Assistant to the Director, News Bureau*
Fred L. Wentworth, *Manager of the Bookstore*

HISTORICAL SKETCH

IN the year 1856, Benjamin Thompson, a farmer of Durham, New Hampshire, made a will, by the terms of which he left his entire estate to the people of New Hampshire, on condition that the state should establish on his land a college of agriculture. The provisions of this will were not made public; no one knew of his proposed philanthropy; the document was laid away in his legal adviser's safe, and it remained sequestered there for the next 34 years.

At almost the same moment that the idea of an agricultural college occurred to Benjamin Thompson, a similar conception of a peoples' college, which, while not neglecting the subjects hitherto deemed essential, should include also in its curriculum courses in agriculture and the mechanic arts, came to Justin Smith Morrill, who, now after a career as clerk, merchant, and farmer, was representing a Vermont district in the national House of Representatives. Mr. Morrill's first bill, offered in 1857, was vetoed by President Buchanan because, in his opinion, its provision that the federal government should give an allotment of the public lands to each state which would set up a college for the benefit of agriculture and the mechanic arts, would cause friction among the states and would be unconstitutional. A similar bill, however, offered by him when the next administration had taken office, passed both houses, and was signed by President Lincoln, July 2, 1862.

Taking advantage of this national legislation, the state of New Hampshire in 1866 accepted the provisions of the act, took scrip in lieu of actual land, and selling this for $80,000, set this sum aside for the new college which it actually established at Hanover in conjunction with the already existent Dartmouth college in 1868. The president of Dartmouth was also president of the New Hampshire College of Agriculture and the Mechanic Arts, as the new institution was named, but there was a distinct board of trustees. The original program of study provided for a three-year course, and in 1871 the first class of three members was graduated. For more than 20 years the college remained at Hanover, an unappreciated branch of Dartmouth, with an average enrollment of about 25 students.

When, however, in 1890 Benjamin Thompson died and the terms of his will became known, the situation changed rapidly. That document had in the lapse of years acquired several codicils. The original bequest, indeed, remained unchanged, but the testator had further provided that if the state of New Hampshire did not accept his gift the land was to go to Massachusetts for the use of a college to be established there, and if that state should decline, to Michigan, with no restrictions of any sort. Michigan had by this time already established an agricultural college which Thompson was willing to aid. New Hampshire, however, acted promptly, the legislature making the necessary enactment in 1891. The

Thompson estate then amounted in land and securities to $300,000, but this was to lie untouched, at compound interest, for a period of 20 years. When, at last, in 1912 it first became available, it amounted to approximately $800,000.

In the meantime the state began its career as a sponsor of higher education by erecting a cow barn in Durham, and the enthusiastic senior class of the college came down from Hanover and had its commencement exercises before the first cattle were installed. As rapidly as possible after this, the state erected four other buildings: Thompson hall, Conant hall, Nesmith hall, and a building for the college shops. All these are still in use, the first named, little changed, still housing the offices of the president and other administrative officers, though the others have been enlarged and remodelled out of all recognition.

The most marked effect of the new environment was an increased enrollment, and in 1893, when the new buildings became ready for occupancy, there were 64 students, 10 of whom were women. There had been but one woman student in all the previous years of the college's existence. The class of 1893 held its commencement in the new Thompson hall, and from then on all classes were held in Durham. It was soon apparent that most of the women students and a good many of the men could not accurately be listed in either of the categories which the name of the institution suggested. When, then, in 1914, constant expansion made some administrative division essential, the college was divided into the three divisions: of Agriculture, Engineering, and Arts and Science, and the hitherto unclassified group was assigned to the Arts and Science division, which from then on grew much more rapidly than the other two.

Moved by its alumni since 1910 to follow the example set it in other states, and feeling that by now with its many courses and its more than 1,000 students another name would more nearly describe the fact than the one originally adopted for the institution, the legislature in 1923 renamed the college the University of New Hampshire, and reorganized it, creating within it the three colleges of Agriculture, Technology, and Liberal Arts, and followed this action in 1925 by providing permanently for its support in granting it an annual income amounting to one mill for each dollar of the assessed valuation of all the taxable property in the state, a sum which this year, 1937, amounts to approximately $548,000.

Today, in addition to the three colleges of the university, there are also an agricultural experiment station, and an agricultural extension service which reaches every town in the state; an engineering experiment station, a summer school, a graduate school, a summer school for zoölogical study on the Isles of Shoals, and a permanent forestry camp with buildings and and four hundred acres of land in the White Mountains.

The university enrollment, though rather rigidly restricted to those in the upper three fourths of the graduating classes of the high schools of the state and to some others of high standing from schools outside the state, now amounts to more than 1,700.

OBJECTIVES OF THE UNIVERSITY

Born in the humanitarian and idealistic fifties, the University of New Hampshire is dedicated to the education of the state. It conceives its duty to be of use to all and not to youth alone.

If primarily an institution for resident teaching, it also enters every shop, every hotel, every manufactory, every farm, every home in the state, for it understands the field of education to be all-inclusive.

In its classrooms, laboratories, and shops it teaches with little regard for precedent whatever is desired, but it will also strive with equal zeal to make it possible for all to find that which is desirable.

It exists not for one group nor for one class, but for all, and its buildings and its campus it would make a meeting place and a rallying place where growth may come to all.

ORGANIZATION OF THE UNIVERSITY OF NEW HAMPSHIRE

The government of the University of New Hampshire is vested in a board of trustees, thirteen in number, of which the governor of the state, the commissioner of agriculture, and the president of the university are members *ex officiis*. In addition there are two members elected by the alumni of the university, one of whom must be a resident of New Hampshire; and eight members appointed by the governor.

Whereas the government of the university is in the hands of the board of trustees, within the university itself there exists the university senate, which is a representative body elected by and from the faculty, which has legislative jurisdiction in all matters of student government and educational policy. Within the senate is an advisory body known as the university council, which acts in an advisory capacity to the president, and serves as an executive committee for the consideration of urgent matter arising between meetings of the senate.

The university senate and council are the result of an attempt to democratize the government of the institution. In recent years the increase in the size of the faculty has tended to make faculty meetings unwieldy. Because of this fact, the idea of a university senate which would allow full representation by means of a smaller group was adopted. At present the senate is composed of the president of the university, the deans of the several colleges, various other administrative officers, and representatives from each department of instruction within the different colleges. Each department has approximately one representative for each three members. These departmental representatives are chosen by ballot within

the department, and all faculty members of the rank of instructor or higher are eligible for election. The democratic ideal represented by the senate is best illustrated by the fact that all eligible members of the faculty must sooner or later represent their respective departments in the senate, since no person is eligible for reëlection until all eligible faculty members of his department have served.

The university council is made up of the president of the university, the various administrative officers of the university and certain other officers and executives whose presence is felt necessary for the understanding of the matters brought before it. In addition the representatives of each college in the senate elect two of their members to serve on the council. The Agricultural Experiment station and Extension service are represented in the senate and council in the person of their director.

That part of the university devoted to resident teaching is composed of three colleges: the College of Agriculture; the College of Technology; and the College of Liberal Arts. Each of these has a dean as the presiding officer, and a faculty which conducts resident teaching work. The college faculties legislate in such matters as are referred to them by the university senate; administer the educational and internal life of their respective colleges within the limits prescribed by the president; and make recommendations to the university senate through the president.

Within the colleges are contained the instructional units of the university such as the department of English, the department of mathematics, and the department of botany. These departments usually have at their heads members of the faculty who have full professorial rank. Under them come other members of equal or lower rank, down to and including the rank of graduate assistant. Coördinate with the college faculties are the Agricultural Experiment station and the Extension service staffs.

The New Hampshire Agricultural Experiment station, a branch of the university, was established by the state, August 4, 1887, under an act of congress of March 2 of that year. This and subsequent acts appropriated funds for conducting research work on agricultural problems in New Hampshire and throughout the nation.

The investigations conducted by the Experiment station vary according to their nature, some lasting through one season only and some covering a period of years. The projects of the station now include ninety-five fundamental investigations to determine the underlying principles of agricultural science and others of more practical application.

Appropriations from the state also enable the Experiment station to conduct a limited amount of state service work on agricultural problems. Advantage of the opportunities offered by the Experiment station has been taken by the state in connection with the tests of seeds, fertilizers, and feeding stuffs; and samples of these collected by the state department of agriculture are tested at the station laboratories each year, in accordance with legislative enactments.

Information relating to agricultural practices is supplied by the various

departments and entails a large volume of correspondence in answer to individual inquiries. Samples of soil are tested; plants and insects are identified; blood samples from hens are tested, and *post mortem* examinations of animals made.

The library of the Experiment station, which is open daily to students and visitors, contains complete files of all bulletins issued by the experiment stations in other states, all United States department of agriculture bulletins, and many other reports, bulletins, and records as well as books of agricultural value.

Publications of the station comprise 302 bulletins of the regular series and 54 circulars, 70 technical bulletins, 64 scientific contributions and 4 school bulletins. The publications cover a wide range of subjects and contain the information gathered by the experts of the station while working on the various projects. The bulletins are issued at regular intervals, and notices of publications are sent to all residents of New Hampshire requesting them.

What the university classes are to its students the Extension service is, only to a lesser degree, to the thousands who are beyond the reach of the classroom. Through it the teachings of the university and the findings of the Experiment station and the United States department of agriculture are now being carried to farms and homes throughout the state by a regularly established force of field workers. There are now ten agricultural agents in the ten counties, ten home demonstration agents, and ten boys' and girls' club agents, five assistant agents, and two agents-at-large. Farm management, dairying, forestry, soils and crops, poultry, horticulture, marketing, engineering, nutrition, clothing and home management demonstrations are also conducted, with specialists in charge.

The Extension service works largely through the New Hampshire Farm Bureau, and has a staff of 58 members. Its publications comprise 182 press bulletins, 208 circulars, and 52 bulletins. Notices of new bulletins are sent to a mailing list, which is maintained in coöperation with the Experiment station. Bulletins are sent free to all who request them.

Reading courses in fifteen subjects in agriculture and home economics, prepared by members of the resident college staff, are offered during the winter months.

In addition to the Agricultural Experiment station and Extension service, the university also includes an Engineering Experiment station which provides engineering and research facilities to all industries of the state. Through it are made available to the manufacturers, for the solution of their technical problems, the complete facilities of the College of Technology, including personnel, laboratories, and equipment. While not directly connected with the instructional departments, it provides training for selected graduate and undergraduate students.

DEGREES

The following degrees are conferred at graduation upon those who have successfully completed the regular courses leading to such degrees, and who have fulfilled all other requirements of the university:

GRADUATE SCHOOL—Master of science, master of arts, master of education, master of civil engineering, master of electrical engineering, and master of mechanical engineering.

COLLEGE OF AGRICULTURE—Bachelor of Science.

COLLEGE OF TECHNOLOGY—Professional degrees of mechanical engineer, civil engineer, electrical engineer; bachelor of science.

COLLEGE OF LIBERAL ARTS—The degree of bachelor of science is conferred upon students graduating from the College of Liberal Arts who have completed a prescribed curriculum in general business, home economics, hotel administration, pre-medical, social service, secretarial, or who have majored in the general arts curriculum in any of the following departments: architecture, botany, chemistry, economics and accounting, education, entomology, geology, home economics, mathematics, physical education for women, physics, sociology, zoölogy.

The degree of bachelor of arts is conferred upon students graduating from the College of Liberal Arts who have majored in the general arts curriculum in any of the following: art in the department of architecture, English, French, German, Latin, Spanish, history, music, philosophy, psychology, political science.

CERTIFICATE

COLLEGE OF AGRICULTURE—In the two-year curriculum, a certificate of graduation.

FACILITIES FOR INSTRUCTION

BUILDINGS FOR ADMINISTRATION AND INSTRUCTION

THOMPSON HALL, the general administration building, was built in 1893 and is named for Benjamin Thompson of Durham, the greatest individual benefactor of the college and university. It contains the office of the president and the offices of other general administrative officers, and also affords classroom and laboratory facilities for work in physical education for women, zoölogy, entomology, and home economics.

CONANT HALL, also built in 1893, is named for John Conant of Jaffrey, an early and generous friend of the college. This building, originally constructed to house scientific departments, gradually became during the passage of years the headquarters of the department of chemistry. It was in this building that Professor Charles James accomplished his researches in the rare earths and minerals. Upon the completion of Charles James hall in 1929, this building was largely given over to civil engineering and geology.

NESMITH HALL, another one of the four original buildings erected in Durham in 1893, is named for Judge George W. Nesmith of Franklin, who was active as president of the board of trustees from 1877 to 1890. This small building was enlarged and renovated in 1933 and now houses the departments of botany and agricultural economics.

SHOPS, originally constructed in 1893 and enlarged during and immediately after the World war, provide facilities for the department charged with the maintenance of the buildings and grounds. This building also houses the laboratories for instruction in machine shop, wood shop, and forge shop, and the automotive laboratory.

COLD STORAGE PLANT.—In another part of the Shops building there is a cold storage plant used by the department of horticulture for the fruit from the university orchards, and as a laboratory for practical instruction and research in the handling and storage of horticultural products.

MORRILL HALL, built in 1902, is named for Senator Justin Morrill of Vermont, sponsor of the Land Grant act. This building serves as headquarters of the College of Agriculture, and contains also the office of the director of experiment station and the extension service. In this building are the laboratories and classrooms of the departments of agronomy, animal husbandry, horticulture, poultry husbandry, forestry, and offices for agricultural extension and station staff members.

HAMILTON SMITH LIBRARY was erected in 1907 by means of a union of funds left by Hamilton Smith, of Durham, for the erection of a town

library building and funds from the Carnegie corporation and the State of New Hampshire. In the fall of 1937, two wings, each 42 feet by 76 feet and one story high, were erected on either side of the original structure, thereby increasing the reading room space from 4,300 to 8,800 square feet and making possible other improvements. The library serves not only the faculty and students of the university but also the residents of the town of Durham, being one of two such libraries in the United States so constituted. Because it is the library of the state university, it serves as far as possible the people of the state of New Hampshire.

(For further information on the library see page 59.)

Dairy Building, constructed in 1910, is arranged and equipped for purposes of dairy instruction. It contains equipment usually found in an up-to-date dairy and affords splendid opportunities for the study of all phases of the dairy industry.

DeMeritt Hall, provided in 1914, is named for Albert DeMeritt of Durham, a long-time friend and staunch supporter of the college. It serves as the headquarters of the College of Technology and affords lecture, recitation, laboratory, and office rooms for the departments of mechanical engineering, electrical engineering, physics, and architecture.

Murkland Hall, built in 1927, is named for Charles Sumner Murkland, president of New Hampshire from 1893 to 1903. It provides classroom and office facilities for the majority of the departments of the College of Liberal Arts. It houses the departments of economics and accounting, English, languages, mathematics, sociology, philosophy and psychology, history, and political science.

Charles James Hall, dedicated in 1929, bears the name of Charles James, professor of chemistry at New Hampshire from 1906 to 1928. This structure houses the department of agricultural and biological chemistry and the department of chemistry. It provides lecture and recitation rooms and laboratories for instruction and research in both of these departments.

Pettee Hall is a new three story building, which is being constructed to replace the agricultural engineering laboratory destroyed by fire in July, 1937. It is named in honor of Dean Emeritus Charles H. Pettee. The building, which will be ready for occupancy in September, 1938, will house the departments of agricultural engineering, home economics, and military science.

Textile and Craft Cottage.—The Textile and Craft cottage is a small house arranged to afford opportunity to those wishing to develop leisure time activities by carrying on simple hand craft projects. The cottage is equipped with looms, rug frames, and tools and supplies for several types of work.

Ballard Hall, originally constructed in 1905 and acquired by purchase in 1914, affords office and classroom facilities for the depart-

ments of education and music, accommodations for Christian Work, Inc., and offices for student organizations.

THE POWER PLANT, erected in 1927, is equipped for heating the buildings of the institution and it is also used for experimental purposes by the students in mechanical engineering.

THE GREENHOUSES, erected in 1928, provide facilities for botanical and horticultural research and instruction.

THE POULTRY PLANT, consisting of several up-to-date houses and improved range facilities for chickens and turkeys, is operated for instructional and research purposes. Experiments are constantly in progress in nutrition, breeding, brooding, management, and diseases.

A special poultry pathology laboratory, maintained for diagnosis and research in poultry diseases, is available for student instructional purposes.

The poultry flock consists of Barred Plymouth Rocks, Single Comb White Leghorns and New Hampshires; also, representative units of Bronze, White Holland, and Bourbon Red turkeys, White Pekin ducks, and Toulouse geese.

THE DAIRY BARN, completed in the spring of 1932, provides accommodations for some 120 dairy animals. This unit consists of the following: main barn for 60 cows; wing for bulls, calves, and young stock; isolation barn; dry cow and young stock barn for 50 head; combine milk room; milk house, with equipment for cooling, bottling and storing milk, and for washing and sterilizing bottles and equipment.

The university dairy herd is made up of representatives of the Ayrshire, Guernsey, Holstein and Jersey breeds.

THE STOCK BARN is thoroughly equipped with modern appliances, and houses an excellent herd of purebred Shorthorns, several Herefords, small flocks of purebred Shropshire and Dorset sheep, and a well-bred Percheron stallion.

THE PIGGERY accommodates a herd of Chester White hogs.

RESIDENTIAL HALLS

PRESIDENT'S HOUSE, a substantial, attractive building was erected in 1904 to provide a residence for the president and his family.

COMMONS was erected in 1919, enlarged in 1925 and again in 1937. It contains the freshman dining hall, a faculty dining room, a cafeteria, a trophy and lounge room, rooms for meetings of student organizations, and provides on the third floor dormitory facilities for a limited number of undergraduate men.

FAIRCHILD HALL, erected in 1916, honors Edward Thomson Fairchild, president of New Hampshire from 1912 to 1917. It is a brick structure of colonial design and furnishes accommodations for 150 undergraduate men.

East and West Halls were erected by the United States government in 1918, in order to furnish housing facilities for troops in training at the college during the World War. These buildings have since been partitioned into moderate-sized rooms and provide desirable accommodations and comfortable quarters at low cost for 230 men.

Smith Hall was originally constructed in 1908 with funds made possible by the generosity of Mrs. Shirley Onderdonk of Durham, who made this provision as a memorial to her mother, Mrs. Alice Hamilton Smith. The original building and an annex constructed in 1918 furnish desirable rooming facilities for 68 women students.

Congreve Hall was built in 1920 with funds made available through the will of Mrs. Alice Hamilton Smith of Durham, and bears the name of a family intimately connected with Mrs. Smith's ancestry. The original building and a wing erected during the summer of 1922 accommodate 100 undergraduate women.

Hetzel Hall, built in 1925, is named for Ralph D. Hetzel, president of New Hampshire from 1917 to 1927. It is the newest men's dormitory on the campus and accommodates 156 undergraduate men.

Scott Hall, completed in 1932, is named for Clarence Watkins Scott, Professor of History at New Hampshire from 1879 to 1930. This building furnishes comfortable accommodations for 120 undergraduate women.

Elizabeth DeMeritt House, erected in 1931, named for Mrs. Elizabeth P. DeMeritt, Dean of Women from 1919–1931, maintained for practice in home management, is a modified Cape Cod cottage, thoroughly equipped with modern household devices and furnished to illustrate various types of treatment in keeping with style. It will house eight resident students and two instructors.

Charles Harvey Hood House, an infirmary erected in 1932, is the gift of Mr. and Mrs. Charles Harvey Hood of Boston. It was erected and will be maintained by funds presented to the trustees in 1930, the fiftieth anniversary of Mr. Hood's graduation from the University of New Hampshire. Hood house, designed and furnished in a cheery, homelike style, is unusually well equipped to care for sick and ailing students. It will accommodate normally thirty patients in both wards and private rooms. The office of the university physician and quarters for three trained nurses are also located in Hood house.

ATHLETIC FACILITIES

Lewis Fields, outdoor recreational center, dedicated October 10, 1936, in honor of Dr. Edward Morgan Lewis, president of the university from 1927 to 1936, include six fields for football, soccer, and lacrosse, and four baseball diamonds for alternate use with some of the aforementioned, a first-class cinder track with a 220-yard straightaway and pits and run-

ways for jumping and vaulting, fourteen composition and six clay tennis courts, concrete bleachers seating 1,750 spectators at baseball games and concrete stands seating 5,000 spectators at football and track and field contests. The entire equipment was built in coöperation with Federal work-relief agencies. Materials used in the construction of the main field stands were provided by alumni of the university as the first project of the Alumni fund.

Brackett Field.—The varsity baseball field on Lewis Fields is known as Brackett field, in honor of William H. L. Brackett, '14, prominent student leader of his college generation who died from wounds received during the World war.

Memorial Field.—At the annual meeting of the New Hampshire alumni association held in Durham in June, 1919, it was voted that the association should erect an appropriate memorial for the eighteen New Hampshire college men who lost their lives in the World war. After careful consideration of all suggestions for a memorial gift, it was voted to raise $25,000 for the construction of a new athletic field to be known as Memorial Field. On March 31, 1921, the campaign "went over the top," and on June 10, 1922 Memorial Field was dedicated and officially turned over to the college. It was the first gift of major importance from the alumni to the university and one of which they were justly proud.

Memorial Field was used by the university as a football field, for track meets, lacrosse games, and for men's physical education classes until the spring of 1937, when it was officially turned over to the women students. The men's activities are now scheduled for Lewis Fields.

Armory and Gymnasium, erected in 1906, contains a large drill hall and gymnasium and provides space for the offices of the departments of physical education and athletics and military science and tactics. In the basement facilities are provided for showers and lockers and for the storage of military and athletic equipment. Upon completion of Pettee hall and the University Field house, this building will be used as a women's gymnasium.

University Field House, under construction adjoining the new Lewis Fields stadium, will house the department of physical education and athletics for men, thereby freeing the present gymnasium for use by the women's department of physical education which at present is housed on the fourth floor of Thompson hall. The Field house will provide space for an indoor baseball diamond, jumping pits, an indoor track, and accommodations for basketball and other sports. Offices for members of the department staff, team managers' quarters, shower, locker and storage facilities will be provided in a wing built on a lower level. Convocation will occasionally be held in the Field house. Other large audiences will also be accommodated in the new structure as occasion demands.

OTHER FACILITIES

LANDS.—The lands of the university total about 1,305 acres. Of this area about 154 acres are devoted to the campus proper and athletic fields; about 257 acres are used for hay, tillage, orchards, and gardens; about 558 acres are forest, wood and brush land; about 300 acres are in pasture; and about 18 acres in ponds.

The Horticultural farm comprises about 20 acres of fruit trees, two to three acres of small fruits, chiefly strawberries, grapes, and raspberries, and several acres of vegetables and garden crop. In addition, there is maintained at the farm a display collection of some 450 varieties of bearded iris.

The orchard site is one of the finest in southern New Hampshire, and the soil, which is a Gloucester stony, sandy loam, has made some of the plots exceedingly productive. Various long-time experiments are underway in these orchards, giving the student opportunity to study and observe trees under various cultural treatments. Nearly all of the important standard varieties of fruit are represented in the collection and in addition a number of the more promising new sorts. In the gardens an excellent collection of vegetable strains and varieties is grown annually. An apiary of 25 hives provides bees for pollination studies and class work.

The farm is well equipped with tractors, sprayers, power cultivator for the garden, and other modern implements. The packing plant which is maintained in connection with it is equipped with an excellent grader and other apparatus for the handling and packing of fruit. The cold storage plant has been described under the buildings for administration and instruction.

MARINE ZOÖLOGICAL LABORATORY.—In 1927 the university acquired the use of land on Appledore island, Isles of Shoals, including an excellent set of buildings for the establishment of a summer course in biology. From this experiment there has been developed the Marine Zoölogical laboratory of the University of New Hampshire. It is at the present time a complete unit within itself which offers adequate instruction in various phases of marine biology as well as courses in histology, embryology, comparative anatomy, and biology-education methods courses. The unit provides adequate housing and recreational facilities, and is particularly adapted for the work of senior or first-year graduate students interested either in teaching, experimental work in biology, or in preparation for medical school.

The Isles of Shoals is a group of small islands nine miles off shore from Portsmouth in an area famous for its abundance of marine life. Much of the work, therefore, is conducted out of doors.

The laboratory plant itself provides ample classroom and laboratory space. There are supplies for all types of ecological and experimental work, including glassware, chemicals, stains, lanterns for projecting slides, and a complete set of microscopes and microscopic equipment for all students. A library sufficient for all the work offered is transported

from the university each summer to the Shoals. Boats for dredging and for ecological study are available, together with the necessary apparatus. Living facilities are provided by dormitories, a faculty house, and a mess hall.

College Woods.—The college owns a tract of 50 acres of old-growth timber and 500 acres of second growth. A nursery for the growing of seedling forest trees has been established. The College woods are also used as a laboratory for forestry students.

Forestry Summer Camp.—The forestry summer camp is at Passaconaway, New Hampshire. Here the university has a tract of 400 acres of timberland, on which are examples of most of the Northern forest types. The property is surrounded by the White Mountain National forest, which makes available to the school more than half a million acres of the finest woodlands in the East. Students are housed in an attractive wooden building, formerly a summer hotel, with 20 sleeping rooms, a large dining room, and a comfortable lounge, suitable for lectures, study, and reading. Drafting rooms, laboratory and darkroom facilities are being added.

There is a game management area close to the camp, and the Bartlett Experimental forest is only a few miles away. In addition various forest operations are being carried on near enough to serve for purposes of instruction.

Recreational activities include swimming, fishing, tennis, and mountain climbing. There are 50 mountain peaks within a 10-mile radius of the camp, on most of which there are trails. Bartlett, Conway and North Conway are easily accessible.

Museum Collection.—Though the university has no museum, there are several collections housed in various buildings. At present, specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the university their permanent depository.

The Pottery.—The pottery is maintained and operated by the League of New Hampshire Arts and Crafts and was organized to teach craftsmen to make pottery which they could sell in the league shops throughout the state. As the principal clay deposits of New Hampshire are in this section of the state, a site was sought in Durham and the university offered to assist. It is housed in one of the laboratory rooms in James hall. The course is open to sophomore, junior, and senior students of the university who may qualify by taking out league membership for a nominal fee. Students may sell the products of their work in the league shops.

The Hamilton Smith Library.—The library at the University of New Hampshire, known as the Hamilton Smith library, was formed through an agreement reached in 1907 with the town of Durham, and includes the collections of the university and those of the former Durham Public library, the Durham Library association, and the New Hamp-

shire Agricultural Experiment station. The Hamilton Smith library building, erected in 1907, is described on page 53.

The library collection now consists of 95,000 bound volumes, and about 625 periodicals are received currently. The library is an official depository for United States government publications and, as such, receives most publications so available. While the major part of the book collection is housed in the main library building, certain departmental collections have been established in other buildings on the campus, including the Experiment Station library in Morrill hall, the Chemistry library in James hall, and the DeMerritt hall library, which contains the principal material relating to the various branches of engineering, architecture, and physics. Various other smaller collections are housed in departmental offices, and are to be found listed in the *Library Handbook*. Noteworthy special collections in the main library include the New Hampshire collection of some 2,000 volumes, the Amoskeag collection, consisting largely of the labor and production records of the old Amoskeag Manufacturing company, and the Mary P. Thompson collection. Recently, by the establishment of small nucleus book collections in women's dormitories, a beginning has been made looking towards what is hoped will develop into well-equipped dormitory libraries.

The library serves not only faculty and students, but also the townspeople of Durham. In addition, as much service as possible is given to the people of the state through coöperation with other libraries. Incoming freshmen are instructed in the use of the library by the staff in conjunction with the faculty of the department of English.

Aside from a small proportion of the collections restricted to use in the library building, all books may be drawn for one or two weeks, with the privilege of renewal, except on new popular works. Fines on overdue books are charged at the rate of two cents a day. In the reserved book room books may be withdrawn for overnight only, subject to a fine of ten cents an hour for late return.

The library is open during the college session from 8 A.M. to 10 P.M. on week days, and from 2 P.M. to 6 P.M. and 7 P.M. to 10 P.M. on Sundays. In the summer session and in vacations the hours are somewhat shorter. A complete statement of library rules is given in the *Library Handbook*, which is distributed free of charge. The library also publishes a free monthly leaflet, the *Library Lantern*, giving annotations and evaluations of new books.

GENERAL INFORMATION

RESERVE OFFICERS TRAINING CORPS.—Recognizing in military training values making for the physical, mental and moral development of the individual and a future safeguard for the nation, the university maintains two units of the Reserve Officers Training corps. This corps comprising units at 125 prominent educational institutions throughout the country, organized by Act of Congress in 1862 in the midst of the Civil War, reorganized in 1916 and again in 1920 as a result of the experience of the World War, provides systematic military training for school and college students and trains specially selected students to become officers of the Reserve corps of the army.

While the War department supervises the training, details officers and non-commissioned officers of the Regular army as instructors, and loans the necessary equipment, students undergoing this instruction and who are members of the R.O.T.C. are in no wise members of the military forces of the government. They remain civilians and, as regards obligations to serve the government, are in the same category as students not members of the R.O.T.C.: that is, enrollment in the R.O.T.C. involves no additional obligations as to service.

The cadets wear, while at military instruction, a uniform furnished by the government. They are put to no expense other than the purchase of one or two textbooks.* Students (freshmen and sophomores) pursuing the basic course are issued attractive uniforms of good quality; advanced students (juniors and seniors) purchase their uniforms with an allowance provided by the government. This uniform is suitable for use after graduation upon the student's becoming a reserve officer.

Military science is a required course for all male students, not especially excused, who are members of the freshman and sophomore classes. Students of the Colleges of Liberal Arts and Agriculture are assigned to the infantry unit. Students of the College of Technology are assigned to the coast (heavy and anti-aircraft) artillery unit. At the conclusion of the first two years, those students who elect, and who are considered especially qualified, are given the opportunity to continue with the advanced course, subject to congressional limitations as to numbers. Students completing four years satisfactorily are commissioned in the Officers' Reserve corps of the United States army.

Both the coast artillery and the infantry courses include military fundamentals. The object of this training is to inculcate habits which

* A deposit of $15 is required of each student having military equipment in his possession, whether registered for military science or not. At the end of the academic year or upon a student's severing his connection with the university this deposit will be refunded to him upon the satisfactory return to the university of all military property loaned except that a reasonable deduction will be made to cover any damage beyond natural wear and tear or for the loss of any of the equipment.

make for success in civil as well as military pursuits; physical stamina, good carriage, courtesy, punctuality, neatness in dress and person, attention to duty, high personal integrity, and loyalty.

In addition, the coast artillery course covers the construction, use and care of artillery material, heavy guns, coast and anti-aircraft gunnery devices and mortar transportation. To the engineering student this course offers, apart from the military training, an excellent opportunity to observe practical applications of his classroom work and to enlarge his view of the engineering field.

The infantry course covers the organization, equipment, tactics and administration of the basic and numerically greatest arm of the service. This course stresses theoretical and practical knowledge of personnel problems and emphasizes leadership.

Advanced students (juniors and seniors) who elect and are selected to continue with the third and fourth years, and who fulfill the required conditions including attendance at the prescribed summer camp, are allowed commutation of subsistence, a uniform allowance, travel expenses to and from camp as well as a per diem allowance while attending camp. The cash value of these for the two years is, at present, about $200. The student is not bound to remain in college nor is he bound to any military service during his course or thereafter. He is required, once having enrolled for the advanced course, to complete it as a prerequisite to graduation, and to observe the rules and regulations governing the corps.

The summer camp, of six weeks' duration, is normally held at the end of the junior year. Here opportunity is offered to meet students of other colleges. The courses taken on the campus are elaborated upon with special attention to the practical side. As the student is furnished an appropriate uniform for wear during this period, his only expense is for such personal items as he may wish to make. The Regular army officers in charge insure proper healthful living conditions, including wholesome food, as well as proper discipline and a healthy moral tone. Medical officers guard the student's health and athletics are encouraged. These camps offer the student scope to enlarge his experience while occupied in activities, mental and physical, that minister to his development.

Bureau of Appointments.—The University bureau of appointments assists seniors and alumni to secure permanent positions after graduation. It corresponds with and interviews school superintendents, personnel managers of industrial concerns, institutional managers, and others who employ college graduates, calling to their attention those seniors and alumni who are seeking positions. The bureau also assists in finding opportunities for men students for employment in and about the village of Durham.

Vocation Days.—For the benefit of students who are about to graduate, the university conducts for three days each year, called Vocation days, a series of meetings to give the student authoritative

information about both the technique of job getting and some of the fields open to the college graduate. In 1938 the visiting speakers discussed manufacturing, social service, welfare work, retailing and merchandising, banking and credit work, engineering, office and secretarial work, home economics, agriculture, the federal bureau of investigation, sales, government aviation, and teaching.

HEALTH SERVICE.—The University Health service includes a university infirmary known as Hood house (for a detailed description of this building see page 56), a university physician, and a staff of registered nurses. The object of this organization is to protect, improve and maintain the health of the students. There is individual health guidance through personal conferences, treatment, and coöperation with family physicians.

The services of the university physician are confined entirely to illness that may be cared for by office calls, dormitory visits, and infirmary confinement.

Injury or illness requiring X-ray examinations, hospital confinement (other than in Hood house), the services of specialists, operations, ambulance service or special prescriptions, are at the expense of the student. For any illness requiring a special nurse, the student pays for such service.

Injuries to athletes connected with training or disabilities incurred in practice for or participation in freshman or intercollegiate athletic contests are attended by the university physician so far as practicable. For those requiring medical attention other than above, the university may assume a portion of the expense, but only upon the approval of the president.

Students, while at Hood house are charged $1.00 a day for its use. Office calls are made at Hood house between the hours of 8.00 A.M. and 5.00 P.M. A charge of $1.00 will be made for all calls at Hood house between the hours of 5.00 P.M. and 8.00 A.M. The fee for such calls is cancelled by the university physician if he finds that the onset of the illness or injury occurred at such time as to make necessary a call during this period. When a student, who has been attended by the Hood house staff, is asked to return for treatment or observation after hours, no fee will be charged.

CHRISTIAN WORK.—Christian Work Incorporated, is the organization through which general religious activities on the campus are stimulated. The advisory board for this undertaking consists of representatives from the various church denominations, the state Y.M.C.A. and Y.W.C.A., the New England Student Christian Movement, the university, the alumni, the faculty, and the students. The board employs a staff for the direct leadership of the work. The program is supported by voluntary contributions from the above groups together with gifts each year from parents of the students and other interested friends.

The object of the organization is to facilitate the coöperation of various persons and groups of persons interested in striving to develop and

to maintain vital religious life. Interested students become members of the Student Christian Movement, which is a fellowship of those who believe that a better life, both personal and social, is possible for all men.

Among the activities of the group are Sunday evening programs at the Community church, weekly student-faculty teas, vesper services, lectures, conferences and social meetings. The staff of Christian Work coöperates with the pastor of the Durham Community church.

Newman Club.—The Newman club is a Roman Catholic club which fosters, in order of importance, the spiritual, intellectual, and social interests of the Catholic students of the university; welds them into a common union; assists the university and its students whenever possible; and promotes by Catholic action through the Bishop of the diocese a more fervent and informed Christian life. Membership is open to all Catholic students, men and women. Roman Catholic services are held every Sunday morning at ten o'clock in the auditorium in Murkland hall, the first Sunday of each month being the monthly communion Sunday for the Newman club. The Newman club at the university was organized in 1926.

The Faculty Club.—The University Faculty club is an organization established in 1920 by members of the faculty of the University of New Hampshire to stimulate their social and recreational interests. Membership is limited to members of the institutional staff.

University Folk Club.—The University Folk club is an organization for all women connected with the university either as members of the staff, as graduates, or through their families. The meetings are held the second Tuesday of each month, from October through May. Although the purpose of the Folk club is primarily social, it has a gift fund for women students, administered by the dean of women and a committee from the club.

STUDENT ACTIVITIES

STUDENT GOVERNMENT

STUDENT COUNCIL.—The Student council is an organization of men students which endeavors to act as follows: (a) as a liaison body between the university administration and the students, in which capacity it makes recommendations to the administration; (b) as a representative body seeking to promote the best interests of the university; (c) as a stimulus in creating student leaders. Members of the council are elected by ballot each Spring. The president of the Association of Women Students meets with the Student council during consideration of matters pertaining to both men and women.

ASSOCIATION OF WOMEN STUDENTS.—The purposes of this association, as stated in the constitution of the organization, are as follows: (a) to promote a sense of individual and collective responsibility among the women students in maintaining the highest standards of university life; (b) to promote the highest standards of honor and integrity in all matters of personal conduct; (c) to enact and enforce laws in all matters operating for the welfare of the women students and which do not fall under the immediate jurisdiction of the University administration; (d) to encourage active coöperation in the work of self-government among the women of the university.

CASQUE AND CASKET.—A society which is composed of students of the upper classes, having an equal number of representatives from each fraternity. Its duty is to regulate the campus interfraternity relations. It is particularly charged with drawing rules governing the fraternity rushing period.

PAN HELLENIC.—An organization designed to transact all business of common interest to the women's fraternities, including the regulation of the rushing period.

ASSOCIATED STUDENT ORGANIZATIONS.—An organization composed of all extra-curricular activities, societies or groups for the purpose of securing a satisfactory administration of activity funds.

Activities receiving funds from the student activity tax are members of this organization. A committee of six appointed by the president of the university advises with organizations relative to the budgeting and expenditure of monies resulting from the collection of the student activity tax, approves the budgets presented, and makes recommendations to the president of the university relative to the general administration of the tax. This committee includes undergraduates and faculty members.

ATHLETIC ASSOCIATION.—The Athletic association, composed of the entire student body, was organized in 1897, for the conduct, in coöperation with the administration and faculty, of a wholesome program of intercollegiate sports. Every undergraduate automatically becomes a member of the association at the time of registration. A ticket is issued to each student at that time which admits him to all home varsity athletic games.

WOMEN'S ATHLETIC ASSOCIATION.—Every woman student automatically becomes a member of the Women's Athletic association at the time of registration. Opportunity is given for participation in extra-curricular team sports and individual athletics, and for leadership in these activities. The association owns a cabin at Mendum's pond that is available for outings. It also sponsors social events, and has recently added to the program an hour of dancing for men and women students twice weekly, with instruction for beginners.

NATIONAL HONOR AND PROFESSIONAL SOCIETIES

PHI KAPPA PHI.—A national honorary fraternity founded at the University of Maine in 1897 for the purpose of promoting the highest grade of scholarship. A chapter was established at the university in 1922. Its membership is taken from the highest ranking members of the senior class. New members are elected at the beginning of the first and second semesters.

ALPHA ZETA.—A national professional honor fraternity of agricultural students, organized at the university in 1903. Membership is honorary and is restricted to students obtaining high class standing or to graduates who have shown marked ability in agricultural study and research.

PHI SIGMA.—A national honor society for students doing major work in biology who have completed a certain number of courses with honor grades. Established in 1915.

TAU KAPPA ALPHA.—A national honor society which takes its membership from students who have been outstanding in debate and oratory. Established on the New Hampshire campus in 1925.

KAPPA DELTA PI.—A chapter of the national educational society, organized from a local group formed on this campus in 1926.

ALPHA CHI SIGMA.—A professional fraternity with chapters in various colleges and universities. Members are elected from high ranking students whose major work is in the department of chemistry. Established on this campus in 1911.

MORTAR BOARD.—A chapter of the national senior women's honorary society, Mortar Board, was established at the University of New Hampshire, February, 1938, with the purpose of stimulating initiative among the underclass women, fostering a spirit of friendship, and upholding the traditions of the university.

STUDENT ACTIVITIES

Members are chosen in the early spring on the basis of scholarship, leadership, and service, from the members of the senior class.

SCABBARD AND BLADE.—A national honorary military fraternity. The New Hampshire company (Company F, Sixth Regiment) was organized in 1926.

BRANCH OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.—A student organization conducted in accordance with the by-laws of the institute, whose meetings are given a place on the student's class schedule. The purpose of the organization is to promote interest in electrical engineering, to foster acquaintance and good fellowship among the faculty and students in the department of electrical engineering.

BRANCH OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—An organization of upperclassmen in mechanical engineering. Holds regular class meetings for the presentation and discussion of engineering papers by members and by visiting engineers.

BRANCH OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS.—An organization of upperclass students in civil engineering. Regular class meetings are held for the purpose of investigating by reading and discussion various engineering topics of the day.

STUDENT PUBLICATIONS

THE NEW HAMPSHIRE.—A semi-weekly newspaper presenting undergraduate and alumni news, published by an editorial board composed of students.

THE GRANITE.—An illustrated annual published by the Junior class.

THE NEW HAMPSHIRE STUDENT WRITER.—The *New Hampshire Student Writer* is a collection of the best undergraduate verse and prose published annually under the supervision of the department of English. This is a paper-bound volume of about 140 pages issued in the second semester and placed on sale at the university book shop. Contributions may be submitted by members of all four classes.

CLUBS

ALPHA SIGMA.—An organization established in 1925, whose membership is taken from high ranking students in architecture.

CAULDRONS.—The purpose of Cauldrons is to give the men students of the university who, for financial or other reasons, are not fraternity members, the advantages of fraternity organization. The society has been granted representation on the Student council, and Sphinx, and the right to participate in intramural sports. No freshman may be taken into membership until the conclusion of the fraternity rushing season. Any member may resign at any time to become a member of a fraternity.

Classical Club.—This society, established in 1927, takes its members from students interested in Latin and Greek.

Durham Camera Club.—The Durham Camera club, while not a university organization, offers opportunity for membership to students and other members of the university.

Erato.—A society composed of students interested in the study and writing of poetry.

Flying Club.—The Flying club was organized in 1931 as the Glider club. Its aim is to foster interest in flying both powered and motorless aircraft as a sport. The club maintains a Waco primary glider. Membership is open to all students.

Folio.—A society composed of students interested in creative writing, particularly the short story and essay.

Forestry Club.—This organization was founded in 1915 and is intended to promote interest in forestry and to bring forward information that cannot be obtained in the classroom. A number of speakers are presented each year in addition to which outings and instruction trips are held under the auspices of the club. Membership is open to forestry students.

French Club.—This society was established in the spring of 1919 to offer competent students an opportunity to acquire a speaking knowledge of the French language and to stimulate an interest in the intellectual life of France.

Gamma Kappa.—An organization, established in 1933, whose membership is taken from high ranking students in geology.

Gilbert and Sullivan Society.—This club, established in 1936, aims to stimulate interest in light opera, and to produce one Gilbert and Sullivan opera each year. Membership includes all students who have participated in a production in the cast, orchestra, ballet, or as stage technicians.

International Relations Club.—One of over 450 chapters scattered throughout the world, the purpose of which is to increase the members' knowledge of international affairs through discussion, lecture, reading, conference, and association with others. The local chapter was organized in 1925 and is open to all students who are interested, upon demonstration that they can meet certain prescribed qualifications. The Carnegie endowment for International Peace furnishes the club with a library on current questions, also issuing a fortnightly summary of international events which is distributed gratis to the members.

The Graduate Science Society.—The Graduate Science society is made up of graduate students and faculty members who are engaged in scientific research at the university. The organization seeks to promote good fellowship and the exchange of ideas in science through the

presentation of papers by both its members and by research investigators of other institutions. It was founded in 1927.

MENORAH SOCIETY.—A local chapter of the Intercollegiate Menorah association for the study and advancement of Jewish culture and ideals. Organized in 1928.

MINNESAENGER.—All members of the university are eligible for membership in *Die Minnesaenger;* this German club has frequent meetings for informal German singing, talks, and pictures; meetings are also held fortnightly for informal German conversation.

NEWMAN CLUB.—(See religious activities.)

N. H. CLUB.—Membership in this organization is open to all men who have earned varsity athletic letters.

OUTING CLUB.—The Outing club, which was established in 1915, sponsors all out-of-door activities, especially mountain climbing and skiing, and conducts the annual Winter Carnival, and the University Horseshow. The club owns two cabins, one in Franconia Notch which will accommodate twenty, and another at Mendums pond, nine miles west of Durham on the Concord road. Besides these cabins the club has the use of a third in Pinkham Notch. Throughout the school year there are weekly trips to the mountains for climbing or skiing. All students, alumni, and faculty are eligible for membership.

PHI LAMBDA PHI.—An honor society whose members are students of high standing in physics.

PLANT SCIENCE CLUB.—Formed in 1927, the Plant Science club is a discussion group composed of faculty members and graduate assistants of the departments of botany, forestry, horticulture, agricultural chemistry, and agronomy. Monthly meetings are held and reports made on research experiments being carried on by the members.

PSI LAMBDA.—A society composed of high ranking students in home economics. Established in 1926.

SOCIOLOGY CLUB.—Reorganized in the fall of 1937, the Sociology club provides an opportunity for informal discussions of social theories, the effects of social changes, and the factors involved in current social problems. Speakers, outstanding in their fields, meet with the group from time to time. Membership is not dependent on the student's major subject.

UNIVERSITY 4-H CLUB.—This organization is composed of students who have been engaged in boys' and girls' club extension work.

YACHT CLUB.—Yacht club, open to students (active membership), faculty, and alumni, was organized in 1936, to further the sport of intercollegiate racing and to teach its members the art of sailing.

THE SENIOR SKULLS.—The Senior Skulls is an honorary organization, the purpose of which is to promote college spirit and to encourage

friendly relationship between fraternities and classes. Members are elected each spring by the society from the junior class.

Blue Key.—Blue Key is a senior honorary society, the membership of which is limited to men who are recognized leaders in undergraduate activities. New members are elected in the spring of their junior year.

The Sphinx Society.—A society organized in 1932 for the purpose of promoting good will between this university and those institutions which send athletic teams to this campus. The Sphinx society meets and houses visiting teams, aids their managers and coaches, conducts the members of the teams about the campus, explaining points of interest, and arranges meetings with any acquaintances visitors may have here. The membership of the society is limited to one member of the junior class selected from each fraternity and one from Cauldrons.

DRAMATIC AND MUSICAL ORGANIZATIONS

Mask and Dagger.—This is a dramatic club which aims to make a practical study of the drama and to present each year three plays on the stage of the "little theater" in Murkland hall. Membership in this society includes students who have participated in plays or who have assisted in stage production.

University Band.—This is a military and concert organization whose membership is taken from members of the university regiment and selected students. Academic credit is given for successful completion of each semester's work. The band plays at various university functions and games.

Glee Club.—The Glee club is divided into two organizations, one for men and one for women. Membership in the club is open to all undergraduates interested in choral singing who fulfill the requirements of a try-out. The club presents programs of choral singing several times each year.

FRATERNITIES AND SORORITIES

The following fraternities and sororities have chapters on the New Hampshire campus. The dates listed indicate (1) date of founding as local fraternity (in parentheses) and (2) date of granting of national charter.

Fraternities.—Kappa Sigma, (1894) 1901; Sigma Alpha Epsilon, (1894) 1917; Theta Chi, (1903) 1910; Lambda Chi Alpha, (1906) 1918; Alpha Tau Omega, (1907) 1917; Phi Mu Delta, (1914) 1918; Pi Kappa Alpha, (1921) 1929; Sigma Beta, 1921; Phi Alpha, (1922) 1924; Theta Kappa Phi, (1922) 1923; Alpha Gamma Rho, 1924; Phi Delta Upsilon, 1924; Tau Kappa Epsilon, (1926) 1932.

Sororities.—Chi Omega, (1897) 1915; Alpha Chi Omega, (1913) 1924; Alpha Xi Delta, (1913) 1914; Phi Mu, (1916) 1919; Kappa Delta, (1919) 1929; Theta Upsilon, (1926) 1930; Pi Lambda Sigma, 1929.

FEES AND EXPENSES

Estimate of Freshman Expenses

	High	*Average*	*Low*
Room (Dormitories) *	$120.00	$80.00	$64.00
Board (at Commons)	200.00	200.00	200.00
Tuition **	150.00	150.00	75.00 and a tuition grant
Uniform †	.....	.....	.....
Books	35.00	35.00	35.00
Laundry	35.00	20.00	15.00
Incidentals ††	100.00	60.00	50.00
Total	$640.00	$545.00	$439.00
Expenses, First Semester	$340.00	$275.00	$230.00

Tuition—Four-Year Students.—Tuition is $150 a year for residents of New Hampshire and $250 for non-residents. Tuition is paid in advance in two equal installments, one on the first day of each semester. Students who find it difficult or impossible to procure the necessary funds for payment on the regular registration day may make arrangements acceptable to the treasurer for a series of payments during a semester.

A commencement fee of $5 is charged upon graduation. Charges will be assessed for extraordinary breakage or damage. No laboratory or course fees are charged. Payment of the tuition entitles the student (four-year, two-year) to admission to all home 'varsity athletic contests.

Tuition—Two-Year Students.—Tuition for two-year students in agriculture is $75 for residents of New Hampshire and $175 for non-residents. Tuition is payable in advance in two equal installments, one on the first day of each semester.

* See bulletin on residential halls.

** If not a resident of New Hampshire add $100 to high and average and $175 to low. If a resident and not a holder of a scholarship, add $75 to low.

† Uniform for members of the Reserve Officers' Training corps is provided by the Federal government. A deposit of $15 is required of each student to whom military equipment is issued.

†† Expenses for travel, clothing, etc., vary with the individual student, and should be added. The Student Activity tax, authorized by vote of the undergraduate students, with the approval of the Board of Trustees is paid by each undergraduate to a duly authorized delegate of the Associated Student Organizations at the time of registration. The University Business office will require evidence of the payment of the tax before registration receipt is issued. The revenue from the tax provides each student with *The New Hampshire*, semi-weekly newspaper; *The Granite*, university annual; student government and class activities. During 1937–38, the tax was $3.65 for men students and $4.50 for women.

BOOKS.—Students may purchase books, drawing instruments, materials, etc., at the University bookstore in Thompson hall.

ROOMS.—The university has three dormitories for women and five for men. *Men of the upper classes may reserve rooms in Hetzel, Commons, and West halls. East and Fairchild halls are reserved for men of the freshman class. Certain rooms in Hetzel hall, not taken by upperclassmen, may also be available to freshmen.* All rooms are heated, lighted and furnished. Bed linen, quilts and towels, however, are provided by the individual student. Each women's dormitory is equipped with a laundry. A service room is provided in each dormitory where grills and irons may be used with safety. Prices range from $64 to $120 a year. Applications for rooms in the dormitories should be addressed to The Registrar, University of New Hampshire, Durham.

Students living in University dormitories are required to sign room contracts covering the college year.

A Five-Dollar ($5.00) Room deposit must accompany each application, this deposit to be forfeited if the room accepted is not occupied by the applicant. The deposit is held as a guarantee against breakage and will be returned at the close of the year or upon withdrawal.

Room rent is payable in advance in two equal installments, one on August 15 and one on registration for the second semester. Rooms reserved will be held only until August 15 unless one-half of the annual rent is paid before that date.

Rooms paid for and not occupied one day after registration may be declared vacant and the room rent returned, unless the individual holding the reservation makes a written request to the registrar to hold the room until a later date. The advance payment for the room will not be returned to those making this special request. No room will be reserved more than ten days after the registration date. Early application is necessary in order to secure a choice of rooms. Rooms in private dormitories or families may be secured for about the same prices as for those in college dormitories.

Women students, unless living at home, are required to room in one of the women's dormitories, or in approved houses. A competent house director is in charge of each women's dormitory.

BOARD.—A dining hall is operated and supervised by the university for the accommodation and benefit of the students. All freshmen, whose homes are not located in Durham, are required to board at the university dining hall. The aim of the compulsory regulation is to insure a broad fellowship in the class, and to safeguard the health of the first-year students by offering skilled dietetic oversight in the selection and preparation of their food. The dining hall is equipped with the best appliances for cooking and serving on a large scale, and is subject to constant sanitary inspection by the university physician. Board is $200 for the college year, payable $100 at registration for each semester.

The dining hall is not operated for profit. Savings made possible

by reduced costs of operation are passed along to the students in the form of a reduced board charge in the second semester.

A cafeteria is open to all students of the upper classes who may desire to take advantage of the low price and the high quality of food available at the university dining hall.

CHECKING ACCOUNTS.—Students are earnestly urged to arrange checking accounts in their home banks or to place money on deposit in the Business office until needed, in order to avoid possible loss resulting from keeping on hand considerable sums of money. Such banking arrangements will also facilitate payment of registration bills which are strictly due and payable on registration day. The Business office will accept and cash student checks.

SELF-SUPPORT.—A great many students earn their education in part by means of their own labor during summers and while in college.

All students and prospective students are advised, however, to carefully survey their individual physical strengths and scholastic aptitudes before committing themselves to the arduous combination of intensive study and part-time employment.

Students are urged not to count too much upon earning their way the first year, and should be sure of at least $400 *from other sources, a low estimate of the first year's expense. Inquiries from men concerning self-support should be addressed to the bureau of appointments, Durham, N. H.*

Student Employment Committee.—In order to insure an equitable distribution of university part-time employment, a committee of the faculty is charged with the responsibility of rating students for employment. The committee accepts no responsibility for the annual placement of students on jobs. Its only function is to try to see that only needy students are certified as eligible to hold positions. Application blanks, obtainable at the office of the Student Aid committee, must be filled out and each student rated before he becomes eligible for a university position. Applications for federal aid work are also handled by the Student Aid committee.

In addition, the University bureau of appointments assists in finding opportunities for men students for employment in faculty homes and about the village of Durham. In the fall and spring months freshmen may secure work several afternoons a week doing such odd jobs or chores as taking care of lawns, gardens, furnaces, etc. By the end of freshman year they may reasonably hope to secure steady work, such as waiting on table, serving as janitor in one of the University buildings, etc.

Women Students.—Employment for women students, except for positions in the university offices or departments, is in the hands of the dean of women, and inquiries from women students should be addressed to her.

Freshman women are advised not to attempt to earn their room and board in private families unless they are in good physical condition and have excellent preparation for their university work.

UNIVERSITY AIDS TO STUDENTS

TUITION GRANTS

In order to enable students to attend the university who would be unable to do so without some financial assistance, the trustees award 250 tuition grants annually to residents of New Hampshire who have attended the university less than two semesters. Each tuition grant pays $75 per year and is good for one year only.

Applications for these scholarships must be returned to the Student Aid committee not later than July 15.

Recommendations for scholarships may be made by the subordinate and Pomona granges, state senators, State Federation of Women's clubs, and citizens of New Hampshire.

Upon investigation and approval scholarships will be granted to those whose need appears to the committee to be the greatest.

SCHOLARSHIPS

A limited number of scholarships are awarded annually to deserving students. In order to grant scholarships equitably the university requires full information of all applicants relative to the necessity for scholarship aid. Scholarship application blanks will be provided upon request to the Student Aid committee.

These scholarships will be forfeited at any time for misconduct. A student placed on probation thereby forfeits his scholarship during the semester of probation.

A more detailed description of the several classes of scholarships follows:

Conant Scholarships.—These scholarships provided by the bequest of John Conant, of Jaffrey, pay $75 at present and are good for one year. By terms of the bequest they are open to men taking agricultural curricula and preference is given to residents of Cheshire county. Application should be made to the Student Aid committee.

Nancy E. Lougee Memorial Scholarships.—Since 1921 the interest on $5,000 bequeathed by Amos D. Lougee, of Somersworth, has been expended for scholarships of $75 each. They will be assigned each year and will be good for one year only. No applications can be approved without satisfactory evidence that the candidates *would be unable to attend without the aid of the scholarships.* Until July 15 of each year, preference will be given to residents of Strafford county. Application should be made direct to the Student Aid committee.

Valentine Smith Scholarships.—Through the generosity of Hamilton Smith of Durham, the sum of $10,000 has been given to establish the Valentine Smith scholarships.

"The income thus accruing shall be given to the graduates of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission."

These are the most remunerative endowed scholarships that the in-

stitution has to offer. They pay $100 a year and are good for four years if reasonable scholarship is maintained.

Competitive examinations for these scholarships will be held in Thompson hall at the university, September 12 and 13, 1938. Examinations will commence at 8 A.M. on Monday. Contestants must present the usual credentials fulfilling the requirements for entrance, and must pass examinations in English, American history, algebra (through quadratics), plane geometry, and either physics or chemistry.

Requests for examinations should be forwarded to the officer in charge of freshmen at least one week before the beginning of the examination period, and must state the names and addresses of the students, and the examinations desired.

Examinations are not restricted to residents of the state.

Class Memorial Scholarships.—In accordance with a communication presented to the board of trustees by the Alumni association in 1922, each class upon graduation may establish a fund of $3,000, the interest of which will be used in payment of a class scholarship, to be awarded by a committee appointed by the president. The respective classes shall forward recommendations to this committee which will investigate such recommendations before awarding the scholarships.

Scholarships shall be limited to candidates of the highest moral standards, physically sound, and preference shall be given to those who require financial aid in order to continue their education, and shall be dependent upon the same factors as govern the holding of other scholarships as regards grades.

Eighteen classes are expected to establish these scholarships, and each scholarship shall be dedicated to the name of one of the eighteen New Hampshire men who died in the service of his country during the World War. Nine classes have established their scholarships to date.

They are: Forrest Eugene Adams Scholarship, Class of 1922; Paul Edward Corriveau Scholarship, Class of 1923; Pitt Sawyer Willand Scholarship, Class of 1924; George Downes Parnell Scholarship, Class of 1925; Cyril Thomas Hunt Scholarship, Class of 1926; Donald Whitney Libby Scholarship, Class of 1927 and family; Frank Booma Scholarship, Class of 1928; Earle Roger Montgomery Scholarship, Class of 1929; Fred Weare Stone Scholarship, Class of 1930.

Ralph D. Hetzel Interscholastic Debating Scholarships.—The Board of Trustees on December 20, 1926, set aside three scholarships each year (each for three years) to be awarded to the three interscholastic debaters who may qualify under regulations defined by the Interscholastic Debating league or by the university. These scholarships are limited to residents of New Hampshire.

Hunt Scholarship.—A special scholarship paying $75 has been established by the trustees at the request of the United States War department for the benefit of soldiers, or sons and daughters of soldiers, in the United States army. This scholarship is named in honor of Colonel William E. Hunt,'99, and Colonel Charles A. Hunt,'01, who have

rendered conspicuous and gallant service as officers of the Regular army before, during, and since the World War. This scholarship will be granted each year and will be good for one year only. Application should be made direct to the Student aid committee. The application cannot be approved without satisfactory evidence that the candidate *would be unable to attend without the aid of scholarship.* Preference will be given to a New Hampshire soldier.

Concord Alumni Scholarship Fund.—The Concord Branch of Alumni of the University of New Hampshire has established a scholarship fund. In accordance with the suggestion of the Concord branch, money paid in from year to year is employed as a part of the Student Loan fund of the university. Ultimately, the principal and such interest as accrues will be transferred to a special scholarship fund.

Frank B. Clark Fund.—A trust fund of $10,000 has been provided by Frank B. Clark of Dover, N. H., the income of which is to be used for the purpose of assisting and encouraging needy and worthy students who are suffering from physical impairment or deformity.

"Students impaired by the loss of an arm shall receive prior consideration.

"The benefits of this gift are to be available to students in any secondary school or college except a secondary school or college which is under the direction or control of a church or religious affiliations or preferences, and with the further understanding that students at the University of New Hampshire shall be given prior consideration."

Dads'-Hetzel Scholarship Fund.—At the second annual Dads' Day at the university, the fathers present voted to establish a scholarship fund to be known as the Dads'-Hetzel fund and subscribed $304. For the present this money will be employed as a part of the Student Loan fund of the university. Ultimately the principal and such interest as accrues will be transferred to a special scholarship fund.

Edmund L. Brigham Scholarships.—The income of a trust fund of $4,812, provided by the will of Edmund L. Brigham, a member of the class of 1876, is divided into two scholarships of equal sums each to be known as the Edmund L. Brigham scholarship. They will be awarded at the end of each year to the two members of the freshman class who under the pressure or necessity of having to earn a portion of their college expenses show either a constant improvement in scholarship, or a high scholastic average, or both.

New Hampshire Branch of National Civic Federation Scholarship.—From the income of a fund of $1,100, established in June, 1930 and supplemented in October, 1937, by the New Hampshire Branch of the National Civic Federation, a scholarship is to be awarded annually to the junior woman majoring in economics or business who, at the end of her junior year, by excellence of scholarship, character and promise of leadership, is judged to be most worthy. The dean of the College of

Liberal Arts and the two ranking members of the department of economics shall name the winner of this scholarship in each year.

S. Morris Locke Memorial Scholarship.—The income of a fund of $3,000 established by the late Mary D. Carbee of Haverhill, N. H., as a memorial to Mr. and Mrs. S. Morris Locke, shall be known as the S. Morris Locke Memorial scholarship. This scholarship is to be awarded each year to the highest ranking junior majoring in chemistry, entomology, or in any work where the microscope or microscopic technique is largely employed, who has demonstrated outstanding qualities of application, industry and initiative in any of these fields of work.

Cogswell Scholarships.—Through the generosity of the trustees of the Cogswell Benevolent Trust of Manchester there will be available to members of the class of 1939, during their senior year, 20 scholarships of $200 each and 10 of $100 each. These scholarships will be given to members of the class whose general record of scholarship, attainments and conduct during the freshman, sophomore, and junior years are adjudged by a committee of the faculty to be most worthy. The committee will scrutinize closely the record of the junior year, and will give weight not only to the general excellence of the scholarship record, but to growth and improvement as well. Prior consideration will be given by the committee to the achievements of the members of the class who are residents of the town of Henniker and the city of Manchester.

Hood Scholarships.—Through the generosity of Charles H. Hood, '80, there are available to qualified students in the College of Agriculture whose aims are set definitely to promote farming as a life opportunity five scholarships of $200 each. These scholarships are awarded to students who maintain high standards of scholastic excellence, strong characters and, in case of competition, are assigned in preference to students who intend after graduation to take up work relating to farm milk production.

George H. Williams Fund.—The income of the fund of $9,900, bequeathed to the university by the late George H. Williams of Dover, N. H., known as the George H. Williams fund, shall be used to award scholarships to deserving and meritorious students of Dover. This income shall be divided into four annual scholarships of equal value. These scholarships, awarded for one year only and not renewable, will be granted to men and women students, residents of Dover, for either the sophomore or junior year. Eligibility shall depend upon character, meritorious scholarship, self-help and evidence of financial need. Application should be made to the student aid committee.

The Ordway Fund.—Through the bequest of Martha H. Ordway, of Hampstead, made in 1934, the income from $2,000 will be expended each year for the benefit of indigent students from Sandown or Hampstead, if any; otherwise for the benefit of other indigent students attending the university. Application should be made to the Student Aid committee.

Charles H. Sanders Fund.—The income from a bequest of $3,000 from the estate of Charles H. Sanders, class of 1871, provides a scholarship in memory of the first class to be graduated from the University in 1871, consisting of William P. Ballard of Concord, Lewis Perkins of Hampton, and Charles H. Sanders of Penacook. This scholarship will be awarded to a needy member of the junior class who has excelled in scholarship or has shown marked improvement in his scholastic achievement during his first two years at the university. Application should be made to the Student Aid committee.

John N. Haines Scholarship.—The income from a fund of $2,475 bequeathed by John N. Haines of Somersworth will be used to provide a scholarship for a deserving student of the university. Preference will be given to a student whose home is in Somersworth. Applications should be directed to the Student Aid committee.

C.M.T.C. Scholarship.—One of the 250 state scholarships already established by the Board of Trustees will be awarded each year to a member of one of the Citizens' Military Training camps in the First Corps area selected from red, white, or blue students by the Commanding General of the First Corps area. This scholarship, available to a freshman for one year only, will be awarded to a resident of the state of New Hampshire whose application for admission to the university has been accepted without condition and who needs help in order to attend the university. The scholarship will be awarded after August 15 of each year.

Harvey L. Boutwell Scholarship.—The income of a bequest of $3,000 of the late Harvey L. Boutwell of Malden, Mass., class of 1882, and member of the board of trustees from 1911 to 1929, provides a scholarship for a deserving student who would otherwise find it difficult to obtain a higher education. It will be awarded annually to a Massachusetts student, preference to be given to a resident of Malden, Mass. The determination of the award will be based on character, scholarship, self-help and evidence of financial need. The scholarship will be awarded for the first time in the college year 1939–40.

STUDENT LOAN FUND

In order to assist needy students to continue their education, the university has established a Student Loan fund. After proper investigation, and approval by parents, loans may be granted to responsible students for tuition or other college expenses, except that freshmen holding tuition grants may borrow in addition not in excess of $25. These loans will bear interest at 2 per cent until graduation or withdrawal from the university, and 5 per cent after graduation or withdrawal and are payable as follows: $5 a month beginning one year after graduation or withdrawal; $10 a month beginning two years after graduation or withdrawal; $15 a month beginning three years after graduation or withdrawal; and a like sum each month thereafter until principal and interest are paid.

PRIZES

The John H. Pearson Trust.—In coöperation with the trustees of the John H. Pearson Estate, Concord, N. H., a student loan fund known as the John H. Pearson trust has been established, and is administered under the conditions governing the Student Loan fund.

James B. Erskine Loan Fund.—In 1930, a bequest of Dr. James B. Erskine, of Tilton, provided a fund of $3,642 for loans to students; loans to bear interest at the rate of 5 per cent until paid. This fund will be reserved for members of the senior class.

S. Morris Locke Loan Fund.—Through a bequest of the late Mary D. Carbee of Haverhill, N. H., a fund has been created for loan purposes in memory of Mr. and Mrs. S. Morris Locke. The fund now totals $18,870.

R. C. Bradley Loan Fund.—The New Hampshire Poultry Growers association has established a loan fund for loan assistance to undergraduates who have been in attendance at the university at least two years with preference given to seniors. Loans are open only to students majoring in poultry husbandry in the College of Agriculture and are based on character, scholarship, and need of financial assistance. Applications made to the Committee on Student Aid are approved by that committee with the advice of a committee selected by the directors of the Poultry Growers association.

PRIZES

Bailey Prize.—To endow the prize formerly offered by C. H. Bailey, '79, and E. A. Bailey, '85, a fund is being created by winners of the prize, the income of which will continue the prize for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested $100 as a memorial to her son, a member of the class of 1893, the income of which is to be given to that senior who is most distinguished for consistent progress and achievement.

Interscholastic Debating Prize.—The University of New Hampshire Debating league was reorganized in 1921, and is under the direction of the instructor in debating and public speaking in the university. Any secondary school of the state is eligible for membership. Preliminary contests are conducted at the schools, and a final contest is held at the university to determine the winner of the league. A prize cup is awarded in rotation to the winners. Other prizes, such as medals and certificates, are awarded to individual debaters from time to time.

Interscholastic Prize Speaking Contest.—This contest, for students of any accredited high school of the state (provided they have not already won the first prize in a previous year), was first held in May, 1912. Three prizes are provided by the university for the winners.

University Inter-Fraternity Scholarship Trophy for Men.—Through the generosity of Wilford A. Osgood, '14, who has donated trophies

for similar purposes in the past, a plaque is donated which is to be awarded each year to that fraternity whose members have the highest scholastic standing as certified by the registrar.

Dietrich Cup.—This cup was given by the class of 1916 in memory of Rosina Martha Dietrich, a member of that class, who died a few weeks before graduation. The cup is to be awarded each year to the girl who attains the highest scholarship in her junior year. The cup is to remain in her possession throughout her senior year and until the next winner is named.

The American Legion Award.—The New Hampshire Department of the American Legion as a mark of recognition of the university's contribution in the World War, and as an expression of its interest in national defense, offers yearly a medal to that man in the senior class who has attained the highest distinction determined by achievement in military science, athletics, and scholarship. The name of the winner will be inscribed on a trophy. This trophy, made possible by the generosity of the American Legion of this state, is to remain in the permanent possession of the university.

Bartlett Prize.—Former Governor John H. Bartlett, Hon. '20, of Portsmouth, N. H., offers a prize of $50 each year, to be awarded annually to that New Hampshire student, a member of the junior class, who ranks highest in scholarship for the year among those young men who have earned at least one-half their expenses since entering the university. This prize was awarded first in June, 1921.

Chi Omega Prize.—Mu Alpha Chapter of Chi Omega awards an annual prize of ten dollars at Commencement to the undergraduate woman student at the university who shall submit to the committee on award the best thesis on any subject dealing with problems of civic interest in sociology or economics. The title shall be approved by the head of the department concerned and the thesis shall be received, not later than June first, and graded by a joint committee composed of the heads of the departments of sociology, economics and English. If, however, no thesis is found by the committee to deserve the award, no prize shall be given.

Class of 1899 Prize.—The class of 1899 has given to the university a fund of $500, the income to be used as a cash prize to be awarded "by the faculty to the senior who in their opinion has developed the highest ideals of good citizenship."

Phi Mu Medal.—The local chapter of Phi Mu offers a gold medal to a senior girl to be awarded on the following basis: 50 points for excellence in physical education, determined by both skill and the spirit in which the work is carried; the remaining 50 points must be attained by evidence of unusual scholastic capacity, democracy, loyalty, and helpfulness in college associations and activities. No candidate will be considered who does not have an average grade for her college work above 80.

Phi Sigma Prize.—In order to promote high scholarship in zoölogy and the allied sciences, the Phi Sigma national honor fraternity offers a prize of $25 to be awarded at Commencement to that senior who ranks highest in zoölogical courses throughout the entire four years of collegiate work. The amount of work carried in biology, together with the average grade in all other courses, shall be considered in making this award. The prize has been offered each year since 1921.

Hood Prizes.—Through the kindly interest and generosity of Charles H. Hood of the class of 1880, the income of funds given to the university in 1921 and in 1924 will be used for the encouragement, aid, and benefit of deserving students.

In accordance with the suggestion of the donor, for the present the income will be expended as follows:

First. *Hood Achievement Prize.*—A gold medal will be awarded annually to that member of the senior class whom the members of the three upper classes choose as giving the greatest promise of becoming a worthy factor in the outside world through his character, scholarship, physical qualifications, personal popularity, leadership and usefulness as a man among men.

Second. *Hood Dairy Prizes.*—A part of the Hood income will be devoted each year to paying a portion of the expenses of the members of a team or teams chosen for excellence in judging dairy cattle and sent to participate in intercollegiate or other dairy contests. Suitable medals will also be provided for the individual members of such teams.

Third. *Hood Supplementary Bequest.*—The income from this bequest will be used for the purchase of a suitably inscribed trophy to become the property of the university. The names of the winners of prizes in dairy cattle judging are to be inscribed annually upon this trophy, which will thus serve as a permanent record to the institution of their skill and accomplishment.

The Fairchild Memorial Prizes.—In 1927 Mask and Dagger, the dramatic society of the University of New Hampshire, established two prizes of $25 each to be awarded each year to the two seniors who have done the most to promote dramatics during their four years at the university. These prizes are given in memory of Edward T. Fairchild, late president of the university.

Thomas J. Davis Prize.—By gift of Thomas J. Davis, Duluth, Minn., a native and former resident of Durham, a fund has been provided for the establishment of dairy and household science prizes as follows:

First. For competitive judging of dairy cattle by "short course students," excluding all four-year students, and allowing a suitable handicap in favor of students who are taking a course of not more than four months.

Second. To young women taking a short course for competitive bread baking as a half unit and for dairy butter making as another half unit.

Locke Prize.—The income of a trust fund of $3,000 bequeathed by the late Mary D. Carbee of Haverhill, N. H., as a memorial to Mr. and Mrs. S. Morris Locke, will be awarded at the end of each year to that junior majoring in Latin, who is adjudged by a committee of the faculty to have excelled in the study of that language. In awarding the prize the committee shall give weight not only to the average grade in Latin, but also to the general record of scholarship, other attainments and character.

Alpha Xi Delta Cup.—A cup will be awarded annually by the Alpha Xi Delta sorority to the senior girl who proves herself to be the best athlete in her class. The cup will be awarded on consideration of the following qualifications: good sportsmanship, physical fitness, athletic achievements, and superior skill. The cup will be awarded by a board of judges including the members of the department of physical education for women, the president of the Association of Women Students and the president of the Women's Athletic association.

Mask and Dagger Achievement Prizes.—In 1929 and in 1930, Mask and Dagger established two annual prizes of $25 each to be known as the Mask and Dagger Achievement prizes. These are awarded each year to the seniors who, during their college courses, have made the most outstanding artistic contributions to the dramatic work of the university.

Psi Lambda Cup.—Psi Lambda, the home economics club, each year awards a cup to the home economics senior who has shown the greatest improvement in personality and scholarship during her four years in college.

Alpha Chi Omega Prize.—A ten dollar prize will be awarded annually by Alpha Tau chapter of Alpha Chi Omega to the undergraduate student of the university who submits to the head of the department of English the best informal essay of less than three thousand words. The title may be chosen by the student. All essays must be written specifically for the Alpha Chi Omega prize. Such essays will be due May 27 of each year. After the prize has been awarded, all essays will be returned upon request.

Association of Women Students Award.—The Association of Women Students will award annually $25 to the woman student who has proved to be of value to the women's student body, and who has shown by scholarship, self-help, leadership, and loyalty that she is worthy of this award.

Alpha Zeta Scholarship Cup.—A cup is awarded annually by the Granite chapter of the fraternity of Alpha Zeta to the sophomore in the College of Agriculture who has made the highest scholastic average during his first three semesters' work. The winner is to have his name engraved on the cup and to hold it for one year.

General Chemistry Award.—The local chapter of Alpha Chi Sigma, professional chemistry society, engraves each year on a trophy placed

in Charles James Hall, the name of the freshman who secures the highest average grade in chemistry.

Phi Lambda Phi Award.—Phi Lambda Phi, physics honor society, will award annually a prize of $10 to a senior member of the society who is most deserving, as revealed by proficiency in physics and general scholarship.

Military Prizes.—The Military department of the university offers gold, silver and bronze medals representing first, second, and third prizes, to be awarded for excellence in individual competitive drill among members of the freshman class.

Similar medals are awarded, after competition, among members of the sophomore class for elementary command and leadership.

Third year students may compete for a presentation sabre, and silver and bronze medals. The scope of this contest is excellence in platoon drill and leadership.

Senior students are eligible to enter a like contest in the field of company drill and leadership.

In addition to the above, gold, silver, and bronze medals are offered in competition among freshmen for excellence in rifle marksmanship.

The R.O.T.C. Band Award: Gold, silver, and bronze medals are awarded annually to those students, members of the R.O.T.C. Band, who are adjudged the most distinguished military musicians.

Scabbard and Blade Gold Medal: Awarded annually to the R.O.T.C. student who is adjudged the most soldierly character. This medal is not awarded on a basis of perfection at drill, but rather on the strength of such qualities as physique, character, energy, mentality, courage, leadership, and in general, such characteristics as promise especial value to the military service of the nation in the event of a future emergency.

The Wellman Trophy.—The Wellman trophy, given by James A. Wellman, of Manchester, a trustee of the university since 1928, to stimulate and promote interest in debating and public speaking, will be awarded annually at the end of his junior year to that student who has shown excellence and continued improvement in debating. The element of improvement will be of first importance in judging the winner. The name of the winner will be engraved on the trophy which will be on display in the Trophy room.

METHODS OF ADMISSION

Provided the special requirements of the separate colleges are fully met, the university will admit without examination properly prepared New Hampshire students who are graduates of high schools or academies of New Hampshire that are approved by the State Board of Education, or those who are graduates of other specially approved schools.

Applicants whose records do not give evidence of capacity, disposition, and preparation adequate for successful college study may be required to withdraw their applications or to submit to examinations to determine their fitness for college study. This applies directly to those who stand low in their respective classes in the secondary school, and to others concerning whose qualifications there may be doubt. In so far as is practicable, officers of the university will arrange for personal conferences with such applicants.

The number of persons, not residents of New Hampshire, admitted each year is determined by vote of the Trustees and the following State law.

"The number of new students entering the University of New Hampshire from the states of Maine, Massachusetts, and Vermont shall not exceed eight per cent of the total enrollment of the entering class of the four-year course of the preceding university year; and the enrollment of new students, exclusive of those from the states of New Hampshire, Maine, Massachusetts, and Vermont, shall not exceed four per cent of the total enrollment of the entering class of the four-year course of the preceding year." This law is waived by act of the Legislature until June 30, 1939. For the present, the number of out-of-state students permitted entrance is limited by the available dormitory and instructional facilities.

Each applicant for admission to the university will be required to submit two application forms: (1) an "admission credential" blank filled out by the headmaster or principal of the secondary school from which he is graduated; (2) a "personal statement" blank filled out by the applicant. These blanks are distributed through New Hampshire and other secondary school officials or they may be secured by application to the chairman, Committee on Admission, Durham, N. H., to whom all such blanks should be forwarded.

In order to give ample time for the selection of out-of-state students, and for full investigation of New Hampshire applicants of doubtful preparation, it is desirable that applicants for admission, both from within and without the state, forward their personal statements and credentials during the month of April, it being understood that the preparatory school work will be completed in June. Credentials should cover work done as nearly as possible to date of application. In addi-

tion to the usual credentials, a personal interview may be required by the Committee on Admission.

Candidates for admission to the freshman class must show evidence, either by credential or examination, that they are prepared in 15 units as indicated in the following table. At least 12 of these units should be from Groups A, B, C, D, and E.

An entrance unit represents one study of four or five recitations a week for one year. It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

Required Units		*College of Agriculture*	*College of Liberal Arts*	*College of Technology*
Group A	English	3	3	3
*Group B**	Mathematics	2	2	3†
Group C	Social Science and history	1	1	1
Group D	Natural Science	1	1	1
Group E	Foreign languages			
Group F	Vocational subjects			
		7	7	8
Elective Units		8	8	7
Total for admission		15	15	15

Elective units may be offered from all groups, including a fourth year of English.

Entrance examinations will be given at the university September 1 and 2. Requests for these examinations should be forwarded to the Dean of the Faculty at least one week in advance.

Cases not covered by the above statements will be decided by the Entrance committee of the faculty.

Candidates for advanced standing may be admitted on the basis of the work satisfactorily completed at the institution from which they come.

Every candidate for admission to the university shall be required to procure a statement, signed by the town or city clerk, to the effect that the father or legal guardian is a resident of the town or city and state from which he purports to register. Students admitted from foreign countries or states other than New Hampshire shall be deemed to be non-resident students throughout the entire university course unless and until the parents or out-of-state legal guardian shall have gained residence in New Hampshire.

* At least two years of mathematics consisting of one year of algebra and one year of plane geometry are required for entrance except that a candidate for admission to the General curriculum of the College of Liberal Arts who offers two units in a single foreign language may substitute for the two units required in mathematics two additional units in subjects named in groups A, C, D and E above.

† Students entering the College of Technology must offer three units of mathematics which should include elementary and advanced algebra, plane and solid geometry.

Admission of non-resident candidates will be by selection, and only records of good grade will be considered; character, leadership, alertness, etc., will also be taken into account. Because of the large number of New Hampshire students needing financial assistance in the form of employment, only a very limited number of applications can be considered which do not give evidence of reasonable financial backing.

Every candidate for admission to the university must, before he can be admitted, present evidence satisfactory to the university physician that he is in good health. This evidence may be secured by members of the entering class through physical examinations given during Freshman week at university expense. Students who enter with advanced standing, special students, and freshmen who do not attend Freshman week must assume personally the expense of physical examinations necessary in securing evidence of satisfactory health. Such evidence must include a complete medical and surgical history of each student, and blank forms intended to assist each applicant in furnishing such a history are provided by the university.

FRESHMAN WEEK

Freshman week was instituted at the University of New Hampshire in 1924. It is evident from a study of the results of the activities of this week that it has served as a valuable means of adjusting freshmen to their new environment, of creating right attitudes towards college work and of minimizing the usual delays during the first few weeks of the regular term. By means of so-called "placement tests" the students will be sectioned according to their abilities and aptitudes. The week also affords an opportunity for the students to learn to know each other, to organize their efforts, to work together, to play together, and to become acquainted with the campus, the buildings, the faculty and with the courses of study and the traditions of the university.

Attendance of all freshmen throughout Freshman week, beginning Tuesday, September 13, and continuing through Saturday, September 17, will be obligatory. Any prospective candidate for the freshman class who is absent from the exercises beginning on September 13 will seriously imperil his admission to the university.

REQUIREMENTS IN DETAIL

GROUP A. ENGLISH

The requirement in English is that recommended by the National Conference on Uniform Entrance Requirements in English: *

"1. Habits of correct, clear, and truthful expression. This part of the requirement calls for a carefully graded course in oral and written composition, and for instruction in the practical essentials of grammar, a study which should be reviewed in the secondary school. In all written work constant attention should be paid to spelling, punctuation, and good usage in general as distinguished from current errors. In all oral work there should be constant insistence upon the elimina-

* Reprinted from Document 123 of the College Entrance Examination Board.

tion of such elementary errors as personal speech-defects, foreign accent, and obscure enunciation."

"2. Ability to read with intelligence and appreciation works of moderate difficulty; familiarity with a few masterpieces. This part of the requirement calls for a carefully graded course in literature."

Lists of books should be provided from which a specified number of units must be chosen for reading and study. These lists should be progressively difficult, ranging from the simpler books suitable to the earlier years in the secondary schools to those requiring the closer study warranted in the later years. Such lists should include the following:

At least one novel each by Scott, Eliot, Dickens, Hardy, Stevenson, Hawthorne, Cooper and Mark Twain; *The Merchant of Venice, As You Like It, Hamlet* or *Macbeth, Midsummer Night's Dream;* Milton's *Minor Poems;* Irving's *Sketch Book;* Coleridge's *Ancient Mariner;* Palgrave's *Golden Treasury;* speeches by Washington and Lincoln. It is also highly *desirable* that the prospective college student should have read the following: some of the great epics in translation; collections of modern verse, of scientific writings, and of modern plays; some biography; and *Myths and Their Meaning,* by Herzberg.†

GROUP B. MATHEMATICS

1. Elementary Algebra.—The four fundamental operations for rational algebraic expressions. Factoring. Fractions, including complex fractions, and ratio and proportion. Linear and quadratic equations, both numerical and literal. Problems depending on linear and quadratic equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

2. Advanced Algebra.—The formula for the *n*th term and the sum of the terms of arithmetical and geometrical progressions, with applications. The theory and use of logarithms, without involving the use of infinite series. The binomial theorem for positive integral exponents. Complex numbers, with graphical representation of sums and differences. Determinants limited to simple cases. The elements of the theory of equations.

3. Plane Geometry.—The usual theorems and constructions of good text-books, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises, including loci problems. Applications to the measurement of lines and plane surfaces.

4. Solid Geometry.—The usual theorems and constructions of good text-books, including the relations of lines and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones;

† For more detailed information concerning the reading, write to Head, Department of English, University of New Hampshire, Durham, New Hampshire.

the sphere and the spherical triangle. The solution of numerous original exercises, including loci problems. Applications to the measurement of surfaces and solids.

5. Plane Trigonometry.—The subject matter of plane trigonometry as presented in good text-books, including the solution and use of trigonometric equations of a simple character, the use of logarithms, the solution of right and oblique triangles, and practical applications.

6. Review Mathematics.—A general mathematics review during half of senior year is recommended, especially for students preparing for college engineering courses. A certificate covering the work of not more than one unit will be accepted for entrance.

GROUP C. SOCIAL SCIENCE AND HISTORY

This group includes history, economics, commercial law, and sociology.

Although there are excellent text-books in history, an adequate preparation cannot be obtained by these alone. Some collateral work is necessary, whatever book is used, and with certain ones a large amount is necessary. The details of the preparatory work in the social sciences are stated in "The Program of Studies Recommended for the Public Schools of New Hampshire," by the State board of education.

1. History of Civilization.

2. Ancient History.—This may include the earliest nations and the period to 800 A.D., or it may be limited to Grecian history and Roman history to the fall of the Western Roman empire.

3. Mediaeval and Modern European History.

4. U. S. Constitutional History.—It is assumed that a reasonable amount of time is to be given to the study of the Constitution of the United States.

5. Sociology.—The background in sociology should include a thorough familiarity with one of the introductory text-books in this field, with collateral emphasis on the basic adjustments of individuals, groups, institutions, races, and classes.

The student should be familiar with the scientific method as applied to the study of society; social ecology; basic processes; laws of social interaction, mobility, and control; basic institutions; characteristics of rural and urban life; and the nature of social problems.

For a more complete description, see the program of studies recommended by the State board of education of New Hampshire.

6. Economics.—The work in this field should consist of the mastery of a standard text or its equivalent assignments from one or more standard works. The study should introduce the student to the broad field of historical and descriptive economics. This should include:

1. Elementary economic geography.
2. The leading facts in the economic history of the United States.
3. Human wants and their satisfaction.
4. A description of money and a brief study of its function.
5. Distribution, including some study of land, labor, capital.
6. Governmental relation and control of business.

For a more complete description see the "Program of Studies" recommended by the State board of education of New Hampshire.

7. Commercial Law.—The work in commercial law should include a study of the elementary principles of the law of contracts, agency, sales, bailments, negotiable instruments, business organizations, personal and real property. (For a detailed statement, see "Program of Studies Recommended for the Public Schools of New Hampshire" by the State board of education.)

GROUP D. NATURAL SCIENCE

A notebook, carefully kept, and examined by the teacher, is an essential part of all laboratory work in science.

1. Biology.—The work in biology should cover the material outlined in the program of studies recommended for the public schools of New Hampshire by the State board of education. Either a half or a whole year's work will be accepted.

2. Chemistry.—Elementary inorganic chemistry should cover (1) a study of the more common non-metallic and metallic elements and their most important compounds; (2) an introduction to the general theoretical principles; (3) calculations based upon chemical equations and changes of gaseous volumes. A year's work should consist of four or five exercises per week, at least one of which should be in laboratory work.

3. Physics.—The work in physics should consist of (1) the study of a standard text for one school year under the guidance of a science teacher. The minimum time devoted to this phase of the work should be four periods a week. (2) Performance of such experiments as the science teacher suggests, under the personal guidance of the teacher. The minimum time for this phase of the work, to include both performance of experiment and writing of report, should be two periods per week.

4. Zoölogy.—A study of the fundamental principles of animal structure and the dissection of type forms. The student should become familiar with the characteristics of the various phyla of the animal kingdom. The study should consist of four or five exercises a week, at least one of which should be laboratory work. Either a half or the whole of a year's work will be accepted.

5. General Science.—To meet a recent movement in the disposition of the science work in the high schools, a course in general science which amounts to at least four exercises a week for one year will be accepted. Such a course may include something of the biologic and earth sciences,

the sciences employed in household economy, and the more common phenomena of physics and chemistry.

GROUP E. FOREIGN LANGUAGES

1. FRENCH.—Work of the first year should include (1) careful drill in pronunciation, through dictation, conversation, and reading aloud; (2) drill upon the rudiments of grammar, with some translation of simple English into idiomatic French; (3) reading of 200 pages of French prose, if French is not the language of the classroom and a large amount of oral French is not used by teacher and pupils, or of 100 pages if French is the language of the classroom and the time saved by a reduced reading standard is devoted to oral work in French; in both cases the reading should be divided between some intensive, accurate study of the French prose, with translation into English to check up on the pupils' understanding of the passage, and some extensive reading to induce pupils to read French for the pleasure and satisfaction it affords.

Work of the second year should include (1) the reading of 300 or 400 pages of French prose, the amount to depend, as in the first year, upon the time devoted to oral work, the reading being again divided into intensive and extensive; (2) dictation, conversation, grammar drill, and composition, based on topics connected with the classroom and events of everyday life in France; (3) some practice in translating into French from English variations or paraphrases of the French texts read, so as to fix important words and idioms in the memory and to transpose the passive knowledge gained from reading into an active command of French.

Work of the third year should include (1) the reading of 500 or 600 pages of French, part intensively, part extensively, with emphasis on books of recognized literary value and on those which describe the history and civilization of France; (2) continued oral drill (dictation, discussions, etc.); (3) emphasis upon the writing of grammatically correct and idiomatic French dealing partly with the texts read, partly with the ordinary experiences of life here and in France.

2. GERMAN.—Work of the first year should include (1) careful drill in pronunciation; (2) drill upon the rudiments of grammar; (3) dictation and other oral work; (4) the reading of from 100 to 200 pages of prose; (5) translation of simple English into correct, idiomatic German. Work of the second year should include (1) the reading of from 200 to 300 pages of prose, part intensively to make the pupils acquire habits of accuracy, part extensively to encourage them to read for pleasure and satisfaction; (2) oral drill (dictation, discussions, reading aloud); (3) continued drill upon the rudiments of grammar, through exercises based upon the texts read and others dealing with life in Germany; (4) the study of German history, customs, and institutions through appropriate reading texts and composition exercises; (5) reading and memorizing of simple German lyrics.

3 LATIN, ELEMENTARY —Grammar and the equivalent of four books of Caesar. Two years' work.

4. LATIN, ADVANCED.—Equivalent of Virgil, six books, and Cicero, six orations.

GROUP F. VOCATIONAL SUBJECTS

1. AGRICULTURE (SMITH-HUGHES).—The work in agriculture covers ten periods a week throughout the school year and includes a study of and participation in the following, supplemented by at least six months of supervised, individual project work on the home farm:

a. Major, contributory, and minor agricultural enterprises in the community, based upon the results of a survey of local farm practice.
b. At least twenty per cent of the total time allotted each year is devoted to farm mechanics, comprising the daily jobs confronting the farmer in keeping his equipment in the best of condition, and in doing the ordinary repair and construction work which arises on the farm.
c. Agricultural economics and farm management are considered each year in relation to each of the three types of enterprises. In addition, part of the work of the senior year is devoted to a synthesis and extension of the principles applied in connection with the three types of enterprise in each of the three preceding years.

Centering around the farm job and the home project, the activities of the pupils include discussions, surveys, directed study, demonstrations, field trips, and manual work.

2. COMMERCIAL SUBJECTS.—Junior business training, commercial arithmetic, bookkeeping, commercial geography and history, stenography and typewriting, office or secretarial practice.

3. HOME ECONOMICS.—Textiles and clothing, foods and nutrition, the home, its care and management, the family and its members, and child development.

4. MECHANIC ARTS.—Cabinetmaking and wood turning, pattern making and molding, tool forging and work on lathe, shaper, planer, drill press and milling machine, electrical work, automobile mechanics and repair, printing, related mechanical drawing, shop mathematics, shop physics, mechanics, shop organization.

SPECIAL STUDENTS

A mature student who is not a candidate for a degree, upon presenting satisfactory evidence of his ability to carry successfully the desired courses, may be admitted as a special student for one year only, upon the approval of the committee on admission.

In choosing his studies he must have the approval of the head of each department in which he elects courses, and of the deans of the colleges concerned.

No credit earned by a special student shall count toward a degree except upon approval of the committee on admission.

ADVANCED STANDING

Candidates for advanced standing from approved institutions may be admitted by the committee on admission. Their status in the University of New Hampshire will be determined by the quantity and quality of the work completed at the institution from which they come.

(1) Such students must present catalogs of the institutions from which they come together with official certificates showing (a) all preparatory subjects accepted for entrance, (b) complete transcripts of records including grades of scholarship in each subject, (c) statements of honorable dismissal.

(2) All candidates for the bachelor's degree, admitted to advanced standing, must spend their last year in residence, either in course or in summer school. This requires the completion of at least 32 semester credits.

(3) Regardless of the amount of advanced standing a student may secure, in no case will he be given a bachelor's degree until he has satisfied the full requirements of the curriculum he may elect.

THE GRADUATE SCHOOL

HERMON L. SLOBIN, *Dean*

AIMS

The Graduate school aims to meet the needs of superior students who are preparing to become teachers in colleges or universities, or investigators, and to offer opportunities to qualified students for a more advanced training than they can obtain in an undergraduate curriculum.

ADMINISTRATION

Graduate work is offered, under the supervision of the dean of the Graduate school, by competent members of various departments of instruction and research. These members constitute the faculty of the Graduate school.

The general administrative functions of the faculty are delegated to the dean and the committee on graduate study.

ADMISSION

A student who holds a bachelor's degree, or its equivalent, from an approved college or university, is eligible for admission to graduate study.

Admission to graduate study does not necessarily imply admission to candidacy for an advanced degree. Students who are not planning to become candidates for an advanced degree may be admitted to graduate study upon the recommendation of the heads of the departments concerned, and with the approval of the dean.

A student may major only in the departments represented in the catalog of the Graduate school.

REGISTRATION

A student desiring to register for graduate study must submit to the dean of the Graduate school the official application for admission to graduate study. Blanks for this purpose may be obtained from the dean of the Graduate school.

Upon admission to graduate work, a student first pays his fee at the business office and deposits his enrollment cards with the registrar.

REQUIREMENTS FOR GRADUATE CREDIT

Graduate credit will not be allowed to undergraduate students unless such credit has been approved in advance by the dean of the Graduate school.

A student will not receive graduate credit for a course in which he has obtained a grade lower than 70.

ADVANCED DEGREES

The advanced degrees conferred are: master of science, master of arts, master of education, master of civil engineering, master of electrical engineering and master of mechanical engineering.

Requirements for the Master's Degree

Residence.—A minimum of one full academic year, or four summer sessions of six weeks each, at the University of New Hampshire, or three summer sessions of eight weeks each, at the Isles of Shoals, in residence is required.

Credits.—An average grade of at least 80 in not less than 30 semester credits is required. These credits must be in courses numbered 50 or over, and must be in the major and allied departments as prescribed by the head of the major department and approved by the dean of the Graduate school. Of the total credits required for an advanced degree, not more than 6 semester credits may be transferred from another institution.

Students who transfer the total of 6 credits from another institution may complete the residence requirement at the university in three summer sessions.

Thesis.—If a thesis is required, the candidate must file with the committee on graduate study, for their approval, a statement of the thesis subject as recommended by the head of the department in which the thesis work has been done, at least six months previous to the time the degree is sought.

All theses must be typewritten upon standard paper, 8½ by 11 inches, medium weight, neatly bound in black cloth, and gilt-lettered on the first cover with the title, name of author, degree sought, and year of graduation. The title page should bear the following statement:

"A thesis submitted to the University of New Hampshire in partial fulfillment of the requirements for the degree of

Master of arts in (name of major subject)
Master of science in (name of major subject)
Master of education
Master of civil engineering
Master of electrical engineering
Master of mechanical engineering."

Whenever a thesis is printed in any periodical, it must be designated as having been accepted as a master's thesis by the University of New Hampshire.

Two bound copies must be filed before commencement day, one with the librarian and one with the head of the department in which the major work has been done.

Examinations.—All candidates must meet the regular departmental requirements as to examinations in the courses for which they are regis-

tered, and the requirement of a special comprehensive examination, by the heads of the departments in which the major and allied courses have been taken, three months previous to the time the degree is sought. In addition, the candidate must pass an oral examination by a special committee designated by the committee on graduate study and including the heads of the departments in which the major and allied courses have been taken, before the candidate may be recommended for the master's degree. At least two months previous to the time the degree is sought the candidate must file with the dean of the Graduate school the "Application for Examination for Advanced Degree." The application forms may be obtained at the office of the dean of the Graduate school.

(For detailed information concerning graduate study, see the catalog of the Graduate school.)

FOUR-YEAR CURRICULA

COLLEGE OF AGRICULTURE

M. Gale Eastman, *Dean*

DEPARTMENTS

Agricultural and Biological Chemistry
Agricultural Economics
Agronomy and Agricultural Engineering
Animal Husbandry
Botany and Bacteriology
Dairy Husbandry
Entomology
Forestry
Horticulture
Poultry Husbandry

Requirements for Degrees

Each candidate for a degree must complete 144 semester credits and the courses prescribed in one of the major four-year curricula.

Students graduating from the four-year curriculum in animal husbandry, dairy husbandry, teacher preparation or general agriculture must present to the dean of the College of Agriculture, at least two weeks prior to commencement, satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12, or through having worked on a farm at least six months subsequent to the age of 16.

Students graduating from the forestry curriculum must have spent at least three months in practical forest work, in addition to attendance at an eight weeks' summer camp under supervision of the forestry department.

Students graduating from the horticulture curriculum or the poultry curriculum must have had practical experience on the college farm and elsewhere to satisfy the heads of the major departments concerned.

Teacher preparation seniors must take one semester of supervised teaching in some high school in the state designated by the state department of education.

Several fields of study in the fine and applied arts within the university are open to students in the College of Agriculture without prerequisites. The attention of students is directed especially to the offerings in architecture, English, horticulture, music, physics, and pottery.

Students having any interest and possible time are urged to consult Mr. George R. Thomas of the department of architecture to learn more about these courses.

Curricula

The object of the four-year curricula of this college is to give a broad general education and thorough training in the basic sciences as well as

to develop specific technical knowledge relating to the various phases of agriculture. To this end several subjects in the Colleges of Liberal Arts and Technology have been added to those provided by the College of Agriculture. The lecture and recitation work of the classroom in agriculture is amply supplemented in all cases by practical exercises in the laboratories and about the farm. Seminars and discussion courses also are provided for seniors or other advanced students.

Many of the graduates of the four-year curriculum return to the farm for the purpose of putting into practice the knowledge and training gained in their college courses, and many of them have become successful and prosperous citizens of their communities; others, who have no farms of their own, accept salaried positions as superintendents or foremen on large dairy, fruit, stock, or poultry farms; still others take positions as teachers of science and agriculture in our secondary schools, or as assistants in our agricultural colleges, experiment stations or extension services; and, finally, an increasingly large number continue in specialized work, here or elsewhere, toward graduate degrees.

The major curricula from which the agricultural student may make his selections are as follows:

1. General Agriculture
2. Agricultural and Biological Chemistry
3. Animal Husbandry
4. Botany and Bacteriology
5. Dairy Husbandry
6. Entomology
7. Forestry
8. Horticulture
9. Poultry Husbandry
10. Teacher Preparation

During the freshman and sophomore years, all agricultural students pursue the same general curriculum of fundamental work. During this period, a very few choices or alternative courses are indicated. The purpose of such a scheme is to make possible a deferred decision by the student who is uncertain of his interests, and therefore cannot decide at once on a curriculum. *However, there are definite advantages that accrue from making a proper selection of courses even in the freshman year,* and students are urged to consider their aptitudes, discuss their problems with advisers, and heads of departments, and reach decisions as to their curriculum preferences during Freshman week.

In other words, these introductory courses are not electives in the usually accepted sense, to be taken or not at the discretion of the student, but rather they make possible the rounding-out of the fundamental work in the interests of perfecting the major curriculum to be finally completed. The highly technical or semi-professional curricula, such as agricultural and biological chemistry, entomology, forestry, and teacher preparation, involve sequences of subject matter for the whole four years, and so much of it that certain courses even in the freshman year must be carefully selected and prescribed. Other curricula may be a little less exacting, but there will always be a decided advantage to the student in making an early and accurate selection of his major work.

The earlier a student can decide on his curriculum, the surer will the prescribed work for a degree be completed in the allotted time, and the more

easily will he find opportunities for choosing electives to suit his personal desires.

The general descriptions of curricula which follow should be carefully studied.

General Agriculture.—This curriculum is offered for the student who wishes to secure a broad, general training in many important branches of agriculture without specializing unduly in any particular department. To this end, it is assumed that the student will take during his four years an average of about two semester courses in at least ten of the following departments: Agronomy, animal husbandry, agricultural chemistry, agricultural economics, botany, chemistry, dairy husbandry, economics, English, entomology, forestry, horticulture, mathematics, physics, poultry husbandry, zoölogy. A majority of these covering work in other colleges is required during the freshman and sophomore years, but several in the College of Agriculture may be elected in the freshman or sophomore year. In addition to such of these courses as have been completed by the end of the sophomore year, obviously other advanced and supplementary courses will be required in the junior and senior years. However, a considerably greater choice of subject matter is allowed here than in the more specialized curricula.

Students who expect to engage in farming will find this so-called general curriculum with its wide range of fundamental courses a most profitable one. This curriculum should also prepare for extension work like that of a county agent, a boys' and girls' club leader, a marketing or farm management investigator, or a soils and crops specialist. For those expecting to specialize later in graduate work, the broad foundation of fundamental subject matter made possible by this curriculum should provide a most desirable background.

During the freshman and sophomore years the student should complete at least three introductory courses in the first semesters and four in the second semesters. In the freshman year this might include any of those listed except forestry 5 and 6, and in the sophomore year the elective list is increased by agronomy, both semesters, entomology 1, agricultural engineering 4, agricultural chemistry 2 or 4 and geology (7).

Agricultural and Biological Chemistry.—Students majoring in this curriculum receive training in the various branches of general chemistry and in their application to the growth and development of plants and animals. The methods used in the chemical analysis of plants and agricultural products and in the study of animal nutrition and metabolism are given especial attention. Aside from the technical and general requirements, numerous electives are offered which enable the student to obtain a more general training, to select work in the applied departments of the college, or to obtain the professional work needed for teaching in the schools of New Hampshire. The curriculum is designed to provide a thorough foundation for those expecting to prepare themselves for teaching and research in colleges and experiment stations. The department is fortunate in being associated with the experiment

station and in that connection having charge of the chemical analysis of feeds and fertilizers for the State department of agriculture. This furnishes an opportunity for the student to come in contact with the inspection and research work of the department and to have the benefit of its equipment.

Students who expect to pursue this curriculum must take Mathematics 5, 6 in the freshman year and Chemistry 47, 48 in the sophomore year. Additional credits as needed may be elected from the introductory courses.

Animal Husbandry.—This curriculum is offered to students who wish a specialized training in the practical and intelligent management, selection, breeding, and feeding of livestock, including horses, beef and dual-purpose cattle, sheep, and swine. Special attention is given to studies which will prepare students for various lines of work, including the extension service, production and sales work with feed concerns and packing plants, and the management of estates and general livestock farms.

Many have found this curriculum excellent preparation for advanced work in veterinary science, civil service, and other specialized lines.

During the junior and senior years each student is advised to elect as many courses in dairy production as possible, thus obtaining fundamental information about a closely-related type of enterprise.

Various anatomical models, charts, and lantern slides, and an up-to-date livestock library are available for student use.

Herd books of the most prominent breeds are used for the purpose of familiarizing students with the methods of tracing pedigrees and with the practices of breeders' associations.

Freshmen should complete Animal husbandry 1 the first semester, and Forestry 2 or Horticulture 2 or 14 the second semester. In the sophomore year Entomology 1 should be completed in the first semester, together with agricultural engineering or poultry husbandry. During the second semester, Agricultural chemistry 4 is expected and Animal husbandry 2. Geology may be added to the electives already suggested for the freshman year to make possible the completion of two more courses. Dairy husbandry 2 is not advised in this curriculum.

Botany and Bacteriology.—The curriculum is flexible and so arranged that students in either the College of Agriculture or the College of Liberal Arts may take major work in the department. The work taken may be broadly cultural or the student may specialize with a view to teaching, or in preparation for graduate study.

Introductory or elective courses in the freshman and sophomore years may be selected largely subject to the desires of the student. An extra year of English will be required not later than the junior year.

The department has laboratories and greenhouses equipped for work in general botany, pathology, physiology and bacteriology and a working library of 2,000 volumes. Ample facilities are provided also for advanced work because of the affiliation of the department with the experiment station. The bacteriology laboratory is equipped for work in

general and applied bacteriology, and opportunity is provided also for advanced work.

Dairy Husbandry.—Students majoring in dairy husbandry are offered specialized courses in (1) dairy production and (2) dairy products or dairy manufactures. Dairy production courses include a study of the dairy breeds and all phases of care, feeding, management, herd analysis, judging, and selection of dairy cattle. Dairy products courses include a study of market milk, tests of dairy products, including the use of the Mojonnier milk tester, dairy bacteriology, and the manufacture of butter, cheese, and ice cream. The dairy herd on the campus, together with the daily-operating market milk pasteurizing and ice cream units in the dairy building, contribute to the practical training of students in any one of several lines of the dairy industry.

The dairy husbandry laboratories, located in the dairy building and in the dairy barn, are well equipped for instructional purposes. The equipment includes power churn, power separator, pasteurizers, coolers, ice cream freezers, bottler, two mechanical refrigeration units and a homogenizer. The milk testing and bacteriological laboratories have equipment necessary for milk testing and inspection, and dairy bacteriology.

Freshmen are advised to take Mathematics 5 and 6 if they intend to major in dairy products or dairy manufactures, which makes a full schedule for the year. Other students should complete Animal husbandry 1 and Forestry 2 or Horticulture 2 or 14. All dairy students must complete Animal husbandry 1 as freshmen or sophomores, and Agricultural chemistry 4 as sophomores. Production students in every case should complete Entomology 1 as sophomores. Other introductory courses for the two years may be selected from such titles as the following: Agricultural engineering 1 and 4, Poultry husbandry 1, and Geology (7). Dairy husbandry 2 is not intended for dairy husbandry majors.

Entomology.—The department of entomology offers various courses and selections of courses for students who wish to major in entomology, and especially for students who desire to secure training through which they can later take up one or another aspect of entomology as a profession.

There are several aspects into which entomology naturally divides itself. Each of these represents a definite field of specialization, and an opportunity for professional work according to the training that the student has had. There is definite advantage in deciding on this major early in the course of undergraduate training. Equipment for a professional position is based on suitable undergraduate work to be followed by more fully specialized graduate work.

Outlines of specific, suggested courses of study are available to the student on application at the department office. These outlines refer to the following specialized fields of entomological training, any one of which is offered by the department to students majoring in entomology.

General Entomology.—A broad selection of courses which furnish a suitable background for later specialization in the following: (a) life his-

tory studies of insects; (b) control of animal parasites; (c) systematic entomology; and (d) the relation of insects to their environment. Students who are interested in entomology in general, but have not yet determined what special field they might wish to enter, may take this grouping of courses.

Toxicology.—This specialized field relates particularly to the control of insects by chemical means. It is a professional field that is rapidly developing. A student who elects it will be given extensive training in chemistry as well as in entomology, and in graduate work will be expected to give considerable attention to insect physiology.

Medical Entomology.—The undergraduate training looking toward specialization in medical entomology includes courses in zoölogy and human physiology, as well as studies in the life histories of important insects that serve as the transmitting agents for various human diseases and in the means of control of such diseases through control of the insects that transmit them.

Forest Entomology.—This aspect of entomology is closely related to the study of forest practices. Students who specialize in this field will take certain courses in forestry as well as fundamental entomology and specialized studies in the life histories of insects attacking forest and shade trees.

Biologic Control.—Certain fundamentals of general entomology are taken up in the subjects studied by a student majoring in this aspect of entomology. In addition, special attention is given to the relation of various natural enemies to insects, including insect parasites and the effects of fungous and bacterial diseases upon insect life and abundance.

In the freshman year, Mathematics 5 and 6 should be completed. In the sophomore year, Entomology 1 is required. Other introductory courses may be selected for additional credits to meet the student's special interest needs.

FORESTRY.—The training and instructional work in forestry is intended to meet the needs of three classes of students: (1) those who wish to secure four years' training in forestry; (2) those who wish to fit themselves for positions in the lumber business; and (3) those who desire a foundation for professional or graduate work in forestry. All students take the same work during the first two years, and their courses of study as juniors and seniors depend on their records as freshmen and sophomores.

General Group.—This group includes those students who wish to secure a sound training in forestry, but who do not care to spend more than four years in college. Considerable latitude is given in the courses which the student may elect, but his efforts are directed toward securing a good general education.

Business Group.—The student who chooses this program of study receives training in the fundamental principles of forestry, and, in addition, elects certain courses in the field of business administration.

Professional Group.—This program of study is designed to fit the student for advanced work at some other institution, where he will be able to satisfy the requirements for the degree of master of forestry in one year. Students who plan to enter the United States forest service, to become teachers, research workers, or consulting foresters, should elect this course. The requirements, however, are high for this group, and only the best students will be encouraged to undertake it.

All freshmen should take forestry 5 and 6. Sophomores will take Civil engineering 7 and 8, Entomology 1, and Forestry 9 and 10. Agricultural chemistry 2, Agricultural engineering 4, Geology (7) or other introductory courses may be elected.

Horticulture.—The department of horticulture offers instruction which, by thorough preparation in fundamentals, fits the student for intelligent and resourceful production and marketing of fruits and vegetables. Students of superior ability will find it possible, by supplementing their undergraduate work with postgraduate study, to prepare for professional positions in teaching, research, or extension work.

The course in ornamental horticulture and floriculture is designed to fit the student for work on large private estates, in retail florists' ranges, or with nursery companies. It does not presume to prepare professional landscape architects.

Major students in this department must elect a minimum of 25 semester credits of advanced horticultural and related courses. In addition, because fundamental to all horticultural work, the study of economics, of plant physiology, and of the control of insects and diseases is required of all students. Similarly, subject matter in other departments related to the student's chosen field of endeavor may be required at the discretion of the head of the department.

Mathematics 5 and 6 is to be preferred in the freshman year for students who expect to do graduate work. Other students should elect some of the introductory courses for additional credits. Agricultural engineering and any of the horticultural courses listed are recommended.

In the sophomore year, Entomology 1 and Agricultural chemistry 2 should be completed. Additional credits will then be obtained from the introductory courses previously mentioned and from those in the sophomore list, like Animal husbandry 1, Poultry husbandry 1, in the first semester; and Dairy husbandry 2, Forestry 2, Geology (7) and Horticulture 28 in the second semester.

Poultry Husbandry.—The curriculum in poultry husbandry has been designed to offer students fundamental and special training in the practical as well as professional fields of poultry. The courses are also offered to those majoring in other departments.

A brief but comprehensive period of practical work is offered for those who lack sufficient experience in the actual care and production

of chicks and laying birds. All of the facilities of the university poultry plant are available for such students.

During the freshman or sophomore year it is necessary that Poultry husbandry 1 be completed, since it is a prerequisite for many of the other advanced courses in this department. Agricultural chemistry 4 should be completed. Any of the other introductory courses in the freshman list are recommended for additional credits except Forestry 5 and 6; and in the sophomore year Agricultural engineering 4, Entomology 1, and Geology (7) may be added to the courses available.

Teacher Preparation.—Under the provisions of the Smith-Hughes act, the University of New Hampshire has been designated as the institution in this state for the preparation of teachers of agriculture. This curriculum gives the young man a broad training in the fundamental sciences and in general agriculture. In addition, he receives professional training in such educational subjects as psychology, principles of education and methods of teaching in supervised practice teaching. Students who complete the curriculum and who have had the requisite amount of practical experience on a farm will be accredited as teachers.

There is a rapidly increasing demand for teachers of agriculture in our secondary schools. Local school boards are beginning to appreciate more fully the value of instruction in agriculture both for the boys who will engage in agriculture after leaving high school, and as electives to maintain the interest of those young men who may wish to take at the university further education in this basic industry. As a result, there are many good positions open for the young men who wish to make the teaching of agriculture a profession.

Freshmen may elect any one of the introductory courses for each semester except Forestry 5 and 6 and Horticulture 26. In the sophomore year more of these same courses should be completed with the addition of Geology (7) and possibly Agricultural engineering 4, Animal husbandry 2 and Entomology 1.

Freshman Year

All Curricula

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Freshman Assembly (*Required First Semester*)		
Mil. Sci. 1, 2	1½	1½
Phys. Ed. 31, 32	½	½
Bot. 1, 2 (*General*)	4	4
Chem. 1, 2 (*Inorganic*)	4	4
Eng. 1, 2 (*Composition*)	3	3
Math. 5, 6 (*First Year*) or Math. 21, 22 (*Elements of Analysis*)	3–5	3–5
Elective	0–2	0–2
	18	18

Introductory courses scheduled to satisfy curricula requirements for the freshman year.

First Semester	*Second Semester*
Forestry 5 [3]	Forestry 6 [3]
Agricultural Engineering 1 [3]	Dairy Husbandry 2 [3]
Animal Husbandry 1 [3]	Forestry 2 [3]
Poultry Husbandry 1 [3]	Horticulture 2 or 14 [3]
	Horticulture 26 [3]

Sophomore Year

All Curricula

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Mil. Sci. 3, 4	1½	1½
Phys. Ed. 33, 34	½	½
Phys. 1, 2 (*Introductory*)	4	4
Agr. Chem. 1 (*Introductory*) or Chem. 47, 48 (*Organic*)	5	0–5
Zoöl. 48 (*General*)		3
Elective	7	4–9
	18	18

Introductory courses scheduled to satisfy curricula requirements for the sophomore year.

First Semester	*Second Semester*
Agronomy 1 [3]	Agronomy 2 [2]
Agricultural Engineering 1 [3]	Agricultural Engineering 4 [1]
Animal Husbandry 1 [3]	Animal Husbandry 2 [1]
Civil Engineering 7 [2]	Civil Engineering 8 [2]
Forestry 9 [3]	Forestry 10 [3]
Education 41 [3]	Agricultural Chemistry 2 or 4 [3]
Entomology 1 [3]	Dairy Husbandry 2 [3]
Poultry Husbandry 1 [3]	Forestry 2 [3]
	Geology (7) [3]
	Horticulture 2 or 14 [3]
	Horticulture 28 [3]

COLLEGE OF AGRICULTURE

GENERAL AGRICULTURE

Junior Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Agr. Econ. 1 (*Rural*)	2	
Agr. Econ. 3 (*Farm Accounting*)	2	
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
A.H. 3, 2 (*Feeds; Judging*)	3	1
Econ. 1, 2 (*Principles*)	3	3
Elective	5	12
	18	18

Prescribed or Recommended Electives

Agron. 3, 4 (*Crop Production; Field Crops*)	3	3
Agron. 5 (*Soil Utilization*)	2	
Agron. 7, 8 (*Agronomic Literature*)	Arr.	Arr.
Bact. 1, 2 (*General; Applied*)	4	4
D.H. 7, 10 (*Butter and Cheese; Bacteriology*)	2	4
D.H. 13, 14 (*Judging*)	1	1
Ent. 53, 52 (*Animal; Orchard, Garden*)	2	2
Hort. 1 (*Pomology*)	3	
P.H. 3, 4 (*Problems*)	1	1
Zoöl. 49 (*Genetics*)	2	

Senior Year

Agr. Econ. 5, 4 (*Coöperative Marketing; Farm Management*)	2	3
Eng. 41, (35) (*Expository Writing; Public Speaking*)	2	3
Elective	14	12
	18	18

Prescribed or Recommended Electives

Agr. Econ. 7, 8 (*Statistics; Rural Community*)	1	3
Agr. Eng. 3, 2 (*Electricity; Power and Machinery*)	3	2
A.H. 9, 10 (*Horses, Beef Cattle; Sheep and Swine*)	3	3
D.H. 3, 4 (*Cattle; Milk Production*)	3	3
D.H. 5, 6 (*Market Milk; Ice Cream*)	3	3
Met. 2 (*Elementary*)		2
Others from junior list		

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

Junior Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Bact. 1, 2 (*General; Applied*)	4	4
Chem. 25, 26 (*Quantitative* and *Qualitative*)	3	3
Lang. (*French or German*)	3	3
Elective	5	6
	18	18
Prescribed or Recommended Electives		
Agron. 3, 4 (*Crop Production; Field Crops*)	3	3
A.H. 3 (*Feeds*)	3	
D.H. 3, 2 (*Dairy Cattle; Fundamentals*)	3	3
Geol. 1, 2 (*Principles*)	4	4
Hort. 2 or 14 (*Pomology; Vegetable Gardening*)		3
Math. 7, 8 (*Calculus*)	3	3

Senior Year

Agr. Chem. 51, 52 (*Physiological*)	5	5
Agr. Chem. 53, 54 (*Agricultural Analysis*)	4	4
Eng. 41 (35) (*Expository Writing; Public Speaking*)	2	3
Elective	7	6
	18	18
Prescribed or Recommended Electives		
Agr. Chem. 55 (*Plant Chemistry*)	4	
Bot. 4 (*Physiology*)		4
Chem. 55, 56 (*Advanced Organic*)	3	3
Chem. 83, 84 (*Physical*)	5	5
Zoöl. 59, 60 (*Physiology*)	4	4

COLLEGE OF AGRICULTURE

ANIMAL HUSBANDRY

Junior Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Agron. 3 (*Crop Production*)	3	
A.H. 5, 6 (*Veterinary Science*)	3	3
A.H. 3 (*Feeds*)	3	
A.H. 4 (*Advanced Judging*)		1
Econ. 1, 2 (*Principles*)	3	3
Elective	3	9
	18	18
Prescribed or Recommended Electives		
Agr. Econ. 1 (*Rural*)	2	
Agr. Econ. 3 (*Farm Accounting*)	2	
Agron. 4 (*Field Crops*)		3
D.H. 14 (*Judging*)		1
Econ. 24 (*Marketing*)		3
Ent. 53 (*Insects of Domestic Animals*)	2	
For. 2 (*Principles*)		3
Zoöl. 49 (*Genetics*)	2	

Senior Year

Agr. Econ. 5, 4 (*Coöperative Marketing; Farm Management*)	2	3
A.H. 7, 8 (*Breeding; Meat and its Products*)	3	2
A.H. 9, 10 (*Horses, Beef; Sheep, Swine*)	3	3
A.H. 12 (*Seminar*)		1
D.H. 3, 4 (*Dairy Cattle; Milk Production*)	3	3
Eng. 41, (35) (*Expository Writing; Public Speaking*)	2	3
Elective	5	3
	18	18
Prescribed or Recommended Electives		
Agr. Eng. 3, 2 (*Electricity; Power and Machinery*)	3	2
Met. 2 (*Elementary*)		2

BOTANY AND BACTERIOLOGY

Junior Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Eng. (*Advanced*)	3	3
Lang. (*French or German*)	3	3
Elective	12	12
	18	18
Prescribed or Recommended Electives		
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Bact. 1, 2 (*General; Applied*)	4	4
Bot. 3, 4 (*Histology; Physiology*)	2	4
Chem. 25, 26 (*Quantitative and Qualitative*)	3	3
Chem. 47, 48 (*Organic*)	5	5
Ent. 1 (*Principles*)	3	
Ent. 54 (*Medical Entomology*)		2
Geol. 1, 2 (*Principles*)	4	4
Hort. 94 (*Plant Evolution*)		2
Zoöl. 1, 2 (*Principles of Zoölogy*)	4	4
Zoöl. 49 (*Genetics*)	2	

Senior Year—Botany

Bact. 1, 2 (*General; Applied*)	4	4
Bot. 5, 52 (*Plant Pathology; Systematic*)	3	2
Bot. 53, 54 (*Advanced*)	Arr.	Arr.
Elective	7	8
	18	18

Senior Year—Bacteriology

Bact. 51, 52 (*Advanced*)	Arr.	Arr.
Zoöl. 17, 18 (*Human Anatomy; Physiology*)	3	3
Zoöl. 15, 16 (*Comparative Anatomy of Vertebrates*)	2	2
Elective	9	9
	18	18
Prescribed or Recommended Electives		
Agr. Chem. 51, 52 (*Physiological*)	5	5
Eng. 41 (35) (*Expository Writing; Public Speaking*)	2	3
Geol. 1, 2 (*Principles*)	4	4
Ger. 5, 6 (*Scientific German*)	3	3
Met. 2 (*Elementary*)		2
Phys. 14 (*Elementary Optics and Photography*)		3

COLLEGE OF AGRICULTURE

DAIRY HUSBANDRY

Junior Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Bact. 1 (*General*)	4	
D.H. 7, 10 (*Butter, Cheese; Bacteriology*)	2	4
D.H. 13, 14 (*Judging*)	1	1
Econ. 1, 2 (*Principles*)	3	3
Elective	8	10
	18	18

Prescribed or Recommended Electives

Acct. 1, 2 (*Elementary*)	4	4
Agr. Econ. 3 (*Farm Accounting*)	2	
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Agron. 3 (*Crop Production*)	3	
A.H. 5, 6 (*Veterinary Science*)	3	3
Bact. 2 (*Applied*)		4
Ent. 53 (*Insects of Domestic Animals*)	2	
Zoöl. 49 (*Genetics*)	2	

Senior Year

Agr. Econ. 5, 4 (*Coöperative Marketing; Farm Management*)	2	3
A.H. 3 (*Feeds*)	3	
D.H. 3, 4 (*Cattle; Milk Production*)	3	3
D.H. 5, 6 (*Market Milk; Ice Cream*)	3	3
D.H. 12 (*Seminar*)		2
D.H. 16 (*Advanced Dairy Science*)		2
Eng. 41 (35) (*Expository Writing; Public Speaking*)	2	3
Elective	5	2
	18	18

Prescribed or Recommended Electives

Agr. Econ. I (*Rural*)	2	
Agr. Eng. 3, 2 (*Electricity; Power and Machinery*)	3	2
Met. 2 (*Elementary*)		2
Others from junior list		

ENTOMOLOGY

Junior Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Bact. 1, 2 (*General; Applied*)	4	4
Econ. 1, 2 (*Principles*)	3	3
Ent. 57, 58 (*Advanced*)	4	4
Elective	7	7
	18	18
Prescribed or Recommended Electives		
Bot. 5, 54 (*Pathology; Advanced*)	3	Arr.
Chem. 25, 26 (*Quantitative and Qualitative*)	3	3
Chem. 47, 48 (*Organic*)	5	5
Chem. 81, 82 (*Physical*)	2	2
Ent. 54 (*Household*)		2
Ent. 56 (*Forest*)		2
Forestry 7, 8 (*Mensuration*) or Forestry 9, 10 (*Silviculture*)	3	3
Lang. (*French or German*)	3	3
Zoöl. 3, 4 (*Hygiene and Sanitation*)	3	3

Senior Year

Eng. 41, (35) (*Expository Writing; Public Speaking*)	2	3
Ent. 59, 60 (*Advanced*)	2–5	2–5
Lang. (*French or German*)	3	3
Elective	8–11	7–10
	18	18
Prescribed or Recommended Electives		
Agr. Chem. 51, 52 (*Physiological*)	5	5
Bot. 3, 4 (*Histology; Physiology*)	2	4
Chem. 83, 84 (*Physical*)	5	5
Zoöl. 51, 52 (*Invertebrates*)	3	3
Zoöl. 53, 54 (*Histology*)	4	4

COLLEGE OF AGRICULTURE

FORESTRY

Junior Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Agron. 1 (*Soils*)	3	
Bot. 4 (*Plant*)		4
Econ. 1, 2 (*Principles*)	3	3
For. 7, 8 (*Mensuration*)	3	3
Elective	9	8
	18	18
Prescribed or Recommended Electives		
Bot. 3, 52 (*Histology; Systematic*)	2	2
Ent. 1, 56 (*Principles; Forest*)	3	2
For. 11, 12 (*Utilization*)	3	3
For. 13, 14 (*Improvements; Fish and Game*)	2	2
Lang. (*French or German*)	3	3
M.E. S4 (*Wood Shop*) / M.E. S12 (*Forge Shop*)		3
Home Econ. 21 (*Camp Cooking*)	1	
For. 21 (*Fish and Game Management*)	3	

SUMMER CAMP

For. 22 (Timber Survey), 8 weeks		6

Senior Year

Eng. 41, (35) (*Expository Writing; Public Speaking*)	2	3
For. 19, 20 (*Management*)	4	4
Elective	9	8
	15	15
Prescribed or Recommended Electives		
Bot. 5 (*Pathology*)	3	
For. 15, 16 (*Thesis*)	2 or 3	2 or 3
For. 18 (*History*)		3
For. 21 (*Fish and Game Management*)	3	
Met. 2 (*Elementary*)		2
Others from junior list		

UNIVERSITY OF NEW HAMPSHIRE

HORTICULTURE

Junior Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Bact. 1 (*General*)	4	
Econ. 1, 2 (*Principles*)	3	3
Hort. 44 (*Practice*)		5
Hort. 94 (*Plant Breeding*)		2
Zoöl. 49 (*Genetics*)	2	
Elective	6	6
	18	18
Prescribed or Recommended Electives		
Agr. Econ. 3 (*Accounting*)	2	
Agron. 3 (*Crop Production*)	3	
Bot. 52 (*Systematic*)		2
Hort. 3, 2 (*Fruit Judging; Pomology*)	2	3
Hort. 27, 26 (*Ornamentals*)	3	3
Hort. 38 (*Floriculture*)		1
Hort. 48 (*Beekeeping*)		2
Met. 2 (*Elementary*)		2
P.H. 8 (*Incubation*)		3

Senior Year

Agr. Econ. 5, 4 (*Coöperative Marketing; Farm Management*)	2	3
Bot. 5, 4 (*Pathology; Physiology*)	3	4
Eng. 41, (35) (*Expository Writing; Public Speaking*)	2	3
Hort. 91, 92 (*Seminar*)	2	2
Hort. 94 (*Plant Evolution*)		2
Elective	9	4
	18	18
Prescribed or Recommended Electives		
Agr. Econ. 1 (*Rural*)	2	
Agr. Eng. 3 (*Electricity*)	3	
Hort. 1, 54 (*Pomology; Advanced*)	3	3
Hort. 39 (*Greenhouse*)	3	
Hort. 49 (*Beekeeping*)	2	
Hort. 65 (*Advanced Vegetable Gardening*)	3	
Others from junior list		

COLLEGE OF AGRICULTURE

POULTRY HUSBANDRY

Junior Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Agr. Econ. 3 (*Farm Accounting*)	2	
Econ. 1, 2 (*Principles*)	3	3
P.H. 7, 6 (*Judging; Breeding*)	3	2
P.H. 13, 14 (*Management; Practice*)	3	4
Zoöl. 49 (*Genetics*)	2	
Elective	5	9
	18	18
Prescribed or Recommended Electives		
Agr. Eng. 3, 2 (*Electricity; Power and Machinery*)	3	2
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Agron. 3, 4 (*Crop Production; Field Crops*)	3	3
A.H. 3 (*Feeds*)	3	
Bact. 1, 2 (*General; Applied*)	4	4

Senior Year

Eng. 41, (35) (*Expository Writing; Public Speaking*)	2	3
P.H. 9, 8 (*Marketing; Incubation*)	2	3
P.H. 15, 10 (*Diseases; Feeding*)	4	3
P.H. 17, 18 (*Seminar*)	1	1
Elective	9	8
	18	18
Prescribed or Recommended Electives		
Agr. Econ. 5, 4 (*Coöperative Marketing; Farm Management*)	2	3
Agr. Econ. 7 (*Statistics*)	1	
Met. 2 (*Elementary*)		2
P.H. 3, 4 (*Problems*)	1	1
P.H. 12 (*Housing*)		2
Others from junior list		

UNIVERSITY OF NEW HAMPSHIRE

TEACHER PREPARATION IN AGRICULTURE

Junior Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Agr. Econ. 3 (*Farm Accounting*)	2	
Agr. Econ. 5 (*Coöperative Marketing*)	2	
Agron. 1, 2 (*Soils; Fertilizers*)	3	2
Agron. 4 (*Field Crops*)		3
A.H. 3 (*Feeds*)	3	
D.H. 4 (*Milk Production*)		3
Educ. 41, 42 (*Psychological Principles of Secondary Education*)	3	3
Educ. 92 (*Problems in Teaching of High School Agriculture*)		3
M.E. S23 (*Forge Shop*)	2	
P.H. 11 (*Poultry for Teachers*)	2	
Elective	1	4
	18	18

Prescribed or Recommended Electives

P.H. 13 (*Management*)	3	

For others, refer to lists in general agriculture.

Senior Year

Agr. Econ. 4 (*Farm Management*)		3
Agr. Econ. 8 (*Rural Community*)		3
Agr. Eng. 6 (*Farm Shop*)		2
D.H. 14 (*Judging*)		1
Educ. 93, (45) (*Supervised Teaching; State Law*)	18	2
Elective		7
	18	18

COLLEGE OF LIBERAL ARTS

C. Floyd Jackson, *Dean*

DEPARTMENTS

Economics and Accounting
Education
English
Geology
History
Home Economics
Hotel Administration
Languages
Music
Philosophy and Psychology
Physical Education for Women
Political Science
Sociology
Zoölogy

Programs of Study—Requirements for Degrees

Each candidate for a degree in the College of Liberal Arts must complete 128 semester credits of which 64 must be with a grade of 70 or better, and in addition must fulfill the requirements of the General Liberal Art curriculum or the requirements of one of the prescribed curricula offered by the College of Liberal Arts.

1. General Liberal Arts Curriculum **

This curriculum provides a general college training which especially prepares for citizenship, secondary school teaching, business, or graduate study. By means of the group system of elective studies an opportunity is given the student to secure an A.B. or B.S. degree.

A. General University Requirements

Convocation	Freshman, sophomore, and junior years
Freshman Assembly	Freshman year—first semester
Physical Education for Men	Freshman and sophomore years
Physical Education for Women	Freshman, sophomore, and junior years
Military Science	Freshman and sophomore years

B. Special Freshman Requirements

The completion of the following special freshman courses:
*English 1 and 2
*Introduction to Contemporary Civilization, History 1 and 2
*A biological science (Botany 1, 2 or Zoölogy 1, 2), or a physical science (Chemistry 1, 2; Geology 1, 2; or Physics 1, 2).

* Not counted toward the fulfillment of major or group requirements.
** For details see pp. 121–122.

C. Special Language and English Requirements

All students are required to pass a reading test in French, German, Latin, or Spanish before graduation. This test will be based on two years of secondary school language training or the equivalent. Also 12 semester hours of English,* including freshman English, are required for graduation.

D. Sophomore Group Requirements

Students are required to complete one year, elected from each of the following three groups of courses. Not less than one year's work in any given course shall count toward the fulfillment of this requirement.

Group I:
(*a*) Mathematics
(*b*) History
(*c*) English, French, German, Greek, Latin, Spanish

Group II:
A biological science (Botany 1, 2 or Zoölogy 1, 2), or a physical science (Chemistry 1, 2; Geology 1, 2, or Physics 1, 2). Students electing a biological science during their freshman year must elect a physical science during their sophomore year, or *vice versa*.

Group III:
Economics, Education, Political Science, Psychology, Philosophy, Sociology.

E. Major Requirements

Each student pursuing the General Liberal Arts curriculum in the College of Liberal Arts shall select at the beginning of the sophomore year a major department in which he must pass courses to a total of 24 semester credits with a grade of 75 or better. Courses ordinarily open to freshmen or taken in the freshman year may not be counted toward the fulfillment of the major requirements. Courses in other departments closely related to the major courses may be counted with the consent of the head of the major department.

The following major departments are open to students in the College of Liberal Arts. Students majoring in departments not in the College of Liberal Arts must have their schedules approved by the dean of the College of Liberal Arts.

Botany
Chemistry
Economics and Accounting
Education
English
Entomology
Geology
History
Home Economics
Languages
Mathematics
Music
Philosophy and Psychology
Phys. Ed. for Women
Physics
Political Science
Sociology
Zoölogy

In addition to the above major departments, students following the General Liberal Arts curriculum may select a program of study cutting across departmental or college lines. Students electing such a program, however, will be held for the requirements of the General Liberal Arts curriculum. The following are representative of such programs.

(a) *Applied Biology.*—Although no formal curriculum has been organized, students interested in applied biology will find it possible to select a sequence of courses leading to professional work in this field in coöperation with the state fish and game department. Students interested in this work should confer with Mr. Earl E. Hoover, assistant professor of economic zoölogy and biologist of the state fish and game department.

(b) *Fine and Applied Arts.*—A number of fields of study in the fine and applied arts within the university are open to students in the College of Liberal Arts who wish to supplement their work in a major department. Students desiring to extend their major programs by such elections should consult with Mr. George R. Thomas of the department of architecture. The various courses in the fine and applied arts are described in this catalog under the description of courses in the following fields:

Architecture (architecture, design, freehand drawing, pottery, water colors, modeling)
English (play production, survey of art)
Home Economics (history of costume, applied design)
Horticulture (landscape gardening, floral design)
Music (history, appreciation, advanced music)
Physical Education for Women (aesthetic dancing)
Physics (photography)

(c) *Pre-Dental.*—Since the requirements for entrance into dental school vary considerably, it is thought advisable not to establish a prescribed curriculum preparing for dental work. Many dental schools will accept students at the completion of two or three years of college work. It is advisable, however, for the student to complete the full four years of college training before entering dental school in case he is financially able to do so. In all cases the program of study will be organized to meet the student's convenience on a two-, three-, or four-year basis and in order to meet the requirements of the particular dental school for which he is preparing.

(d) *Pre-Law.*—Students who plan to enter law school upon graduation from college are counselled to major in the department of political science. The bar associations and the law schools of the country do not prescribe a specific undergraduate curriculum for future lawyers; but it is generally recognized that the social sciences, history, and English constitute the best general background obtainable for law. There is a temptation for the unadvised to overload their schedules with college law courses in the belief that they are receiving in this manner the best

training the college affords. This is a mistake and the student is urged to seek faculty advice as soon as he has made up his mind to train for law. Prompt and proper advice will avoid much difficulty both in college and later in law school.

(e) *Pre-Nursing and Technician Training.*—The requirements of students interested in nursing and technician's training are so varied as to make it impossible to establish a definite curriculum. In general, such students will be expected to include in their programs of study courses in human anatomy and physiology, hygiene and sanitation, certain courses in chemistry, and bacteriology. As a rule it will be found necessary for students to take additional work following graduation; this invariably will be the case of those following the pre-nursing program.

(f) *Social Service.*—Students may prepare for social work as a career under one of three plans. (a) In every way the most desirable is to take the full four years at the University of New Hampshire as a cultural background preparation for a two-year course in a recognized school of social work. (b) Failing the necessary resources for such extended graduate training, it is possible to acquire the fundamental social service principles and techniques by taking a sociology major at the University of New Hampshire, including the social work courses (61, 76, 97, 98). (c) To meet the needs of students desiring supervised urban training, three years may be taken at the University of New Hampshire, and the fourth at Simmons college or another approved school of social work. The year's residence requirement will be waived and the degree of bachelor of science will be awarded by the University of New Hampshire on the successful completion of the fourth year in such a school.

Social service includes, among others, the following fields: family case work, child caring, child placement, settlement and neighborhood house, institutional work for defectives and dependents, municipal and county relief work, probation, correctional school and prison service, Y.M.C.A. and Y.W.C.A. secretarial service, municipal playground direction, child guidance clinics, community chest work, consular and foreign commercial service, rural community organization, etc.

(g) *Preparation for Teaching.*—Students may prepare for teaching either by completing the requirements of one of the teacher-preparation curricula of the university (see pp. 130–135) or by completing such courses as will meet the teacher-certification requirements of the state in which they desire to teach.*

2. Prescribed Curricula (College of Liberal Arts)

Students may elect a prescribed curriculum only with the consent of the head of the department in which the curriculum is offered. They must also satisfy the special freshman and the special language and English requirements (see B and C under General Liberal Arts curriculum)

* See Guidance of Students Preparing to Teach, p. 133.

and must pass at least 24 semester credits of the required courses in the prescribed curriculum with a grade of 75 or better.

The following prescribed curricula lead to the degree of Bachelor of Science: General Business; Education-Teacher Preparation; Home Economics, Teacher Preparation, Institutional Management, Extension Training; Hotel Administration; Pre-Medical; Secretarial.

(a) *General Business Curriculum.*—Students who wish to prepare for a business career should take the curriculum in general business. This curriculum has been planned so as to offer the foundation for a broad cultural education during the first and second years of the curriculum, and to introduce the student to the business courses in the junior and senior years. (For details, see p. 123.)

(b) *Home Economics Curricula.*—The curricula in home economics are planned to meet the demands for scientific training in homemaking; also special curricula are outlined for students who wish to enter fields of professional activity in educational and institutional work. Several courses are offered as electives for those who do not wish to major in home economics but who desire to study one or more phases of homemaking. (For details, see pp. 124–125.)

The courses in home economics are based upon the physical, biological, and social sciences. The technical work in foods, nutrition, and dietetics is based upon the principles of chemistry and physiology; that in sanitation necessitates a knowledge of chemistry and bacteriology. Home administration and the care and education of children demand knowledge of the principles of human nutrition and dietetics, as well as of economics, psychology and sociology. The study of color and design is fundamental to the courses in costume design and house decoration.

The home economics curricula offered are as follows:

(1) Teacher Preparation Curriculum. To prepare students to teach home economics in junior and senior high schools.

(2) Institutional Management Curriculum. To train students for positions as dietitians and managers in public institutions, such as college dormitories, hospitals, tearooms, cafeterias, etc.

(3) Extension Training Curriculum. To prepare students to become home demonstration and boys' and girls' club agents.

Students wishing to train for homemaking and child guidance should take a General Liberal Arts curriculum, majoring in home economics. (See p. 124.)

(c) *Hotel Administration Curriculum.*—This four-year curriculum is designed to train selected young men and women on a semi-vocational plan to undertake hotel work, with emphasis on the problems of the resort hotel. Courses already offered in accounting, engineering, home economics, chemistry, history, languages, economics, and English are combined with courses in the specialized field of hotel operation to make a program of study broad in outlook but directed toward a definite goal.

The basic work lies in four main divisions, foods, engineering, ac-

counting, and specialized hotel work. These courses are required, leaving about one-third of the curriculum for elective work for which subjects in allied fields are suggested. In addition to the curriculum each student will be required to secure a minimum of twenty points of hotel practice. This will be gained through work in hotels where supervision will be given, grade of work reported, and the requirement satisfied at the rate of one point per week of employment. Not over twelve points may be given for any one type of work performed, nor more than twenty-four points from any one hotel. (For details, see pp. 126–127.)

(d) *Pre-Medical Curriculum.*—This curriculum is offered to meet the needs of students who are preparing for the medical profession.

It is highly desirable that a student spend four years at this institution in preparation for a medical training, although some medical colleges do not require a degree for entrance. The four years of pre-medical work will, however, give the student a good cultural foundation for his future medical work. Students who wish to take this curriculum must obtain the permission of the committee on pre-medical instruction.

Students following the prescribed pre-medical curriculum will be eligible for entrance into any Class A medical school. However, owing to the crowded condition of most medical schools, only those students standing in the upper third of their class during their pre-medical work may be admitted. Some medical institutions restrict the number of students admitted from any one pre-medical school. Preference is always given to those students having the most complete training and highest standing in their pre-medical work. (For details, see p. 128.)

(e) *Secretarial Curriculum.*—This curriculum has been prepared to give a course in secretarial training, based as much as is practical on a liberal education. Its primary purpose is to train students for secretarial positions. It combines the technical training of a business secretary with that of a liberal arts education. (For details, see p. 129.)

COLLEGE OF LIBERAL ARTS

GENERAL LIBERAL ARTS CURRICULUM

Freshman Year

All Curricula

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Freshman Assembly (*Required first semester*)		
Mil. Sci. 1, 2	1½	1½
Phys. Ed. 31, 32 (*For men*)	½	½
Phys. Ed. 1, 2 (*For women*)	2	2
Eng. 1, 2 (*Composition*)	3	3
Hist. 1, 2 (*Introduction to Contemporary Civilization*)	4	4
*A biological science (*Bot. 1, 2 or Zoöl. 1, 2*) or a physical science (*Chem. 1, 2; Geol. 1, 2; or Phys. 1, 2*)	4	4
Suggested electives:		
Bot. 1, 2 (*General Botany*)	4	4
Chem. 1, 2 (*General Chemistry*)	4	4
Eng. 3, 4 (*Survey of English Literature*)	3	3
Geol. 1, 2 (*Principles of Geology*)	4	4
Hist. 3, 4 (*Modern European History*)	3	3
H.E. 1, 2 (*Homemaking*)	3	3
‡Lang. (*French, German, Latin* or *Spanish*)	3	3
**Math. 1, 2 (*Algebra, Trigonometry*) or Math. 31, 32 (*Elem. Mathematical Analysis*)	3	3
Music 19, 20 (*Appreciation of Music*)	2	2
Phys. 1, 2 (*Introductory Physics*)	4	4
Pol. Sci. 1, 2 (*Citizenship*)	3	3
Soc. 1, 2 (*Principles of Sociology; Social Psychology*)	3	3
Zoöl. 1, 2 (*Basic Principles of Animal Life*)	4	4
	16	16

Sophomore Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Mil. Sci. 3, 4	1½	1½
Phys. Ed. 33, 34 (*For men*)	½	½
Phys. Ed. 3, 4 (*For women*)	1	1
†Eng.	3	3
Elect one year's work from each of the three following groups:		
Group I. Math. (*One year*)	3	3
Hist. (*One year*)	3	3
Lang. (*French, German, Greek, Latin, Spanish*) (*One year*)	3	3
Eng. (*A third year of English*)	3	3

* Students electing a biological science during their freshman year must elect a physical science during their sophomore year, or *vice versa*.

‡ All students are required to pass a reading test in French, German, Latin or Spanish before graduation. This test will be based on two years of secondary school language training or the equivalent. Students not passing this test during the Freshman Week examinations are advised to elect language their freshman year. Students will be assigned to language courses on the basis of their grades in the language placement examination given during freshman week.

** Open only to students with one year each of algebra and plane geometry. Students who wish to continue mathematics beyond the freshman year should take Math. 1, 2.

† A second year's work in English is required but may be taken during the sophomore, junior or senior year. See special language and English requirements.

	First Semester Credits	*Second Semester Credits*
Group II. *A biological science (*Bot. 1, 2; or Zoöl. 1, 2*) or a physical science (*Chem. 1, 2; Geol. 1, 2; or Phys. 1, 2*)	4	4
Group III. Econ. (*One year*)	3	3
Educ. (*One year*)	3	3
Pol. Sci. (*One year*)	3	3
Phil. (*One year*)	3	3
Psych. (*One year*)	3	3
Soc. (*One year*)	3	3
Electives to meet semester requirements		
	16	16

Junior Year

Convocation (*Required*)		
Phys. Ed. 5, 6 (*For women*)	1	1
Major course (*First major course with grade of 75 or better*)	3	3
Major course (*Second major course with grade of 75 or better*)	3	3
Electives to meet semester requirements		
	16	16

Senior Year

Major course (*Third major course with grade of 75 or better*)	3	3
Major course (*Fourth major course with grade of 75 or better*)	3	3
Electives to meet semester requirements		
	16	16

* Students electing a biological science during their freshman year must elect a physical science during their sophomore year, or *vice versa*.

COLLEGE OF LIBERAL ARTS

GENERAL BUSINESS CURRICULUM

Freshman Year

	First Semester Credits	Second Semester Credits
See freshman requirements, page 121.		
Suggested elective:		
Math. 31, 32 (*Elementary Mathematical Analysis*)	3	3
	16	16

Sophomore Year

Convocation (*Required*)		
Mil. Sci. 3, 4	1½	1½
Phys. Ed. 33, 34	½	½
*Eng. (*A second year of English*)	3	3
Acct. 1, 2 (*Elementary Accounting*)	4	4
Econ. 1, 2 (*Principles of Economics*)	3	3
Econ. 3 (*Economic and Commercial Geography*)	3	
Econ. 4 (*Economic and Commercial Development of the U. S.*)		3
Electives to meet semester requirements		
	16	16

Junior Year

Convocation (*Required*)		
Acct. 3, 4 (*Intermediate Accounting*)	4	4
Econ. 21, 22 (*Commercial Law*)	3	3
Econ. 23 (*Public Regulation of Business*)	3	
Econ. 24 (*Marketing*)		3
Electives		
	16	16

Senior Year

Econ. 53 (*Money and Banking*)	3	
Econ. 51 (*Labor Problems*)	3	
Electives to meet semester requirements		
	16	16

* A second year of English must be taken before graduation.

UNIVERSITY OF NEW HAMPSHIRE

HOME ECONOMICS CURRICULA

A. Teacher Preparation
B. Institutional Management
C. Extension Training
D. *General Liberal Arts

Freshman Year

	First Semester Credits	Second Semester Credits
See freshman requirements, page 121.		
Suggested elective:		
H.E. 1, 2 (*Homemaking*)	3	3
	16	16

Sophomore Year

Convocation (*Required*)		
Phys. Ed. 3, 4	1	1
**Eng. (*A second year of English*)	3	3
Chem. 1, 2 (*General Chemistry*)	4	4
H.E. 3, 4 (*Clothing Selection*)	3	3
H.E. 15, 16 (*Foods*)	3	3
Suggested electives:		
§Educ. 41, 42 (*Psych. Prin. of Secondary Education*)	3	3
¶Psych. 51 (*Psych. of Childhood and Adolescence*)	3	
¶Psych. 62 (*Mental Hygiene*)		3
	16	16

Junior Year

Convocation (*Required*)		
Phys. Ed. 5, 6	1	1
Agr. Chem. 5 (*Organic and Biol. Chem.*)	5	
‖Agr. Chem. 6 (*Chem. of Food and Nutrition*)		3
H.E. 20 (*Dietetics*)		3
§Educ. 51, 52 (*Soc. Prin. of Secondary Education*)	3	3
H.E. 31, 32 (*Home Building and Furnishing*)	3	3
†H.E. 5, 6 (*Clothing Construction*)	2	2
H.E. 25, 26 (*Child Development*)	3	3
Electives to meet semester requirements		
	17	18

* Students taking this curriculum in home economics should follow the General Liberal Arts curriculum on page 121.

** A second year of English must be taken before graduation.

§ Teacher preparation majors only.

¶ Institutional and extension majors only.

‖ Required of students who intend to become hospital dietitians; elective for others.

† Teacher preparation and extension majors only.

COLLEGE OF LIBERAL ARTS

TEACHER PREPARATION CURRICULUM

Senior Year

	First Semester Credits		*Second Semester Credits*
H.E. 33 (*Home Management*)	3		
H.E. 35 (*Home Management House*)	3		
H.E.-Ed. 91 (*Problems in the Teaching of High School Home Economics*)	3		
H.E.-Ed. 94 (*Supervised Teaching*)			10
H.E.-Ed. 96 (*Seminar*)			3
Suggested elective:			
Educ. 45 (*N. H. State Program of Studies and School Law*)	2	or	2
Electives to meet semester requirements			
	16		16

INSTITUTIONAL MANAGEMENT CURRICULUM

H.E. 33 (*Home Management*)	3		
H.E. (35) (*Home Management House*)			3
H.E. 17, 18 (*Advanced Foods*)	2		2
H.E. 41 (*Institutional Management*)	3		
H.E. 43, 44 (*Institutional Practice*)	2		2
H.E. 19 (*Nutrition*)	2		
Acct. 1, 2 (*Elementary Accounting*)	4		4
Electives to meet semester requirements			
	16		16

EXTENSION TRAINING CURRICULUM

H.E. 33 (*Home Management*)	3		
Agr. Econ. 8 (*The Rural Community*)			3
H.E. (35) (*Home Management House*)			3
H.E.-Ed. 91 (*Problems in the Teaching of High School Home Economics*)	3		
H.E. 17, 18 (*Advanced Foods*)	2		2
Electives to meet semester requirements			
	16		16

UNIVERSITY OF NEW HAMPSHIRE

HOTEL ADMINISTRATION CURRICULUM

Freshman Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Freshman Assembly (*Required first semester*)		
Mil. Sci. 1, 2	1½	1½
Phys. Ed. 31, 32	½	½
Eng. 1, 2 (*Composition*)	3	3
Hist. 1, 2 (*Introduction to Contemporary Civilization*)	4	4
H.A. 1 (*Orientation*)	1	
M.E. (1) (*Engineering Drawing*)		2
Suggested electives:		
Chem. 1, 2 (*General Chemistry*)	4	4
Math. 31, 32 (*Elementary Mathematical Analysis*)	3	3
Lang. (*General Arts requirement*)	3	3
H.A. 40 (*Lectures on Hotel Management*)		1
	16	16

Sophomore Year

Convocation (*Required*)		
Mil. Sci. 3, 4	1½	1½
Phys. Ed. 33, 34	½	½
Acct. 1, 2 (*Elementary Accounting*)	4	4
H.E. 15, 16 (*Foods*)	3	3
Econ. 1, 2 (*Principles of Economics*)	3	3
H.A. 21, 22 (*Introductory Hotel Engineering*)	4	4
H.A. 42 (*Lectures on Hotel Management*)		1
Suggested electives:		
Hort. 1 (*Harvesting and Marketing of Fruits*)	3	
Hort. 28 (*Elementary Landscape Design*)		3
Ent. 54 (*Household Insects; Medical Entomology*)		2
Foreign Language	3	3
Ag. Chem. 5 (*Organic and Biological Chemistry*)	5	
Ag. Chem. 6 (*Chemistry of Food and Nutrition*)		3
	16	17

JUNIOR YEAR

	First Semester Credits	Second Semester Credits
Acct. 9, 10 (*Hotel Accounting*)	3	3
H.E. 41 (*Institutional Management*)	3	
H.E. 43, 44 (*Institutional Practice*)	2	2
H.E. 46 (*Furniture and Textiles*)		3
H.A. 5 (*Hotel Operation*)	2	
H.A. 44 (*Lectures on Hotel Management*)		1
E.E. 31 (*Electric Circuits*)	2	
M.E. 41 (*Heating and Ventilating*)		2
Suggested electives:		
Psych. 21, 22 (*Elementary Psychology*)	3	3
Econ. 23 (*Public Regulation of Business*)	3	
Econ. 53, 54 (*Money and Banking*)	3	3
A.H. 8 (*Meat and Its Products; Livestock Markets*)		2
Bact. 1 (*General Bacteriology*)	4	
Bact. 2 (*Applied Bacteriology*)		4
Soc. 88 (*Recreation and Leisure*)		3
	16	16

SENIOR YEAR

H.A. 7 (*Hotel Public Relations*)	3	
H.A. 8 (*Front Office Procedure*)		1
H.A. 46 (*Lectures on Hotel Management*)		1
Econ. 21, 22 (*Commercial Law*)	3	3
Eng. 41 (*Expository Writing*)	2	
Eng. (35) (*Public Speaking*)		3
Suggested electives:		
See other years		
Geol. 4 (*Geography of North America*)		3
M.E. 5, 6 (*Mechanical Laboratory*)	1	1
Acct. 7, 8 (*Cost Accounting*)	4	4
H.E. (*Menu Planning*)		1
Arch. 19, 20 (*Building Construction*)	3	3
Hist. (*History of Hotels and Inns*)		
	16	16

PRE-MEDICAL CURRICULUM *

	First Semester Credits	*Second Semester Credits*
See freshman requirements, page 121.		
Suggested electives:		
Chem. 1, 2 (*General Chemistry*)	4	4
Zoöl. 1, 2 (*Principles of Zoölogy*)	4	4
	16	16
Sophomore Year		
Convocation (*Required*)		
Mil. Sci. 3, 4	1½	1½
Phys. Ed. 33, 34	½	½
Eng. (*Second year of English*)	3	3
Chem. 25, 26 (*Introductory Quantitative and Qualitative Analysis*)	3	3
Zoöl. 15, 16 (*Comparative Anatomy of the Vertebrates*)	3	3
Suggested elective:		
Lang. (*French or German*)	3	3
	16	16
Junior Year		
Convocation (*Required*)		
Phys. 5, 6 (*Pre-medical Physics*)	5	5
Chem. 53, 54 (*Organic Chemistry*)	5	5
Suggested electives:		
Advanced Chemistry	4	4
Economics	3	3
Advanced English	3	3
Foreign Language	3	3
History	3	3
Mathematics	4	4
Political Science	3	3
Psychology	3	3
Sociology	3	3
Advanced Zoölogy	4	4
	16	16
Senior Year		
Adv. Zoöl.	4	4
Suggested electives:		
Advanced Chemistry	4	4
Economics	3	3
Advanced English	3	3
Foreign Language	3	3
History	3	3
Mathematics	4	4
Political Science	3	3
Psychology	3	3
Sociology	3	3
Advanced Zoölogy	4	4
	16	16

* Students who wish to take the Pre-medical curriculum must obtain the permission of the committee on pre-medical instruction.

COLLEGE OF LIBERAL ARTS

SECRETARIAL CURRICULUM

Freshman Year

	First Semester Credits	*Second Semester Credits*
See freshman requirements, page 121		
Suggested elective:		
Lang. or Math. 31, 32	3	3
	16	16

Sophomore Year

Convocation (*Required*)		
Phys. Ed. 3, 4	1	1
Eng. (*A second year of English*)	3	3
Econ. 3 (*Economic and Commercial Geography*)	3	
Econ. 4 (*Economic and Commercial Development of the U. S.*)		3
Acct. 1, 2 (*Elementary Accounting*)	4	4
Suggested electives to meet semester requirements: Education, Language, Statistics, Sociology		
	16	16

Junior Year

Convocation (*Required*)		
Phys. Ed. 5, 6	1	1
Shorthand 1, 2	3	3
Typewriting 7, 8	2	2
Eng. (*A third year of English*)	3	3
Econ. 1, 2 (*Principles of Economics*)	3	3
Electives to meet semester requirements		
	16	16

Senior Year

Shorthand and Office Practice 3, 4	3	3
Typewriting 9, 10	2	2
Electives to meet semester requirements		
	16	16

Note: Students preparing to teach secretarial subjects must elect in addition a sufficient number of courses in economics, accounting, and education to meet state requirements.

University Teacher Preparation Curricula

The University of New Hampshire has accepted the responsibility of preparing teachers for the secondary schools of New Hampshire and neighboring states.

The University Teacher Preparation Curriculum.—The University Teacher Preparation curriculum presented on page 134 of this catalog includes the basic courses which it is believed are needed in the preparation of secondary-school teachers. These courses are designed to give thorough preparation in subject-matter fields in which the individual desires to teach. The courses in education aim to develop an appreciative understanding of adolescents and their educational needs, of our democratic society and its needs which our secondary schools should endeavor to meet, of the objectives and techniques of secondary-school teaching, and of the problems of teaching peculiar to the subject-matter fields in which the student intends to teach. The curriculum also includes a semester of supervised teaching designed to give prospective teachers opportunity to teach under supervision but also under as nearly normal conditions as can be arranged.

It is important to note that the program of this curriculum may be completed not only by students majoring in the department of education, but also by students majoring in any of the departments of the university offering work the subject-matter of which is offered in secondary schools. General Arts curriculum students satisfactorily completing this curriculum are released from the sophomore group requirements of the General Liberal Arts curriculum (see p. 121) and are entitled to the degree awarded to students majoring in their respective subjects. Students satisfactorily completing this curriculum are entitled to a certificate indicating the fact.

This curriculum is sufficiently flexible to provide the differentiation necessary to meet the needs of students who may be planning to teach: (1) English and the foreign languages, (2) English and the social studies, (3) mathematics and the biological or physical sciences, or (4) the commercial subjects. Students who are planning to teach the commercial subjects take their teaching major and minors in the field of economics and commerce.

Freshmen who plan to complete the University Teacher Preparation curriculum in the teaching of history or social studies should elect European History (History 3,4).

Since the State of New Hampshire requires each candidate for certification to be prepared to teach three subjects which are referred to as "teaching major" and first and second "teaching minors,"* the University Teacher Preparation curriculum includes the requirement of the satisfactory completion of 24 semester credits in a teaching major and

* The requirements of the State of New Hampshire are a teaching major of 18 semester credits, a first teaching minor of 12 semester credits, and a second teaching minor of 6 semester credits. For detailed information concerning teaching majors and minors, consult the department of education.

of 12 semester credits in each of two teaching minors. This work may include any courses in the respective subject-matter fields taken in college. The student before registering for supervised teaching must complete with an average grade of 75 or better, at least 18 semester credits in the subject-matter field in which he desires to teach under supervision.

COURSES IN PROBLEMS IN THE TEACHING OF HIGH SCHOOL SUBJECTS.—The courses in problems in the teaching of high school subjects are listed on pages 177–178. From these the student planning to complete the University Teacher Preparation curriculum selects his courses in his teaching major and minor fields. To be eligible for supervised teaching the student must complete this course in his teaching major with a grade of at least 75.

COURSES IN SUPERVISED TEACHING.—The work in supervised teaching is under the direction of the professor and associate professor of education serving as director and the associate director of student teaching. Students teach under the general direction of the members of the university faculty conducting the courses in problems of teaching the various school subjects. Students teach under the immediate direction of selected classroom teachers in high schools approved by the university.

In the supervised teaching courses the student participates in the conduct of class exercises and in the control of the classroom, at first chiefly as an observer, but gradually entering into teacher responsibilities until complete charge of the classroom is secured. Frequent conferences and discussions.

This work is required in the University Teacher Preparation curriculum, but will be open only to students whose applications are approved by the head of the department of education and the supervisor of student teaching in the subject or subjects in which the applicant desires to do supervised teaching. Applications should be filed in the office of the department of education in October of the academic year in which the supervised teaching is to be done. No applications will be considered unless the applicant has completed with a grade of at least 75 the following courses in Education: 41, 42 (or 121-a, 122-b, and 123-c), 51, 52, (or 131-a, 132-b, and 133-c), and 61 (or 141-a, 142-b) and, with an average grade of 75 or better, at least 18 semester credits in the subject-matter field in which he desires to teach under supervision.

The applicant must also complete with a grade of at least 75 a course in the problems of teaching the subject in which he desires to do supervised teaching.

COLLEGE OF AGRICULTURE TEACHER PREPARATION CURRICULUM.—Under the provisions of the Smith-Hughes act, the University of New Hampshire has been designated as the institution in this state for the preparation of teachers of agriculture. The College of Agriculture Teacher Preparation curriculum gives the young man a broad training in the fundamental sciences and in general agriculture. In addition, he receives professional training in such educational subjects as psychology, principles of education, methods of teaching and supervised student

teaching. Students who complete the curriculum and who have had the requisite amount of practical experience on a farm will be accredited as teachers.

For information concerning the teacher-preparation work offered in the College of Agriculture, see description of the College of Agriculture Teacher Preparation curriculum on pages 103, 104, 114 of this catalog.

Home Economics Teacher Preparation Curriculum.—To meet the demand for teachers of home economics in the junior and senior high schools the university has organized the Home Economics Teacher Preparation curriculum, details of which may be found on pages 119, 124, 125 of this catalog.

The University Physical Education Teacher Preparation Curriculum for Men.—For men students who plan to prepare themselves for positions of teachers of physical education or of directors of physical education, the university has organized the University Physical Education Teacher Preparation curriculum for Men (see p. 135). This curriculum is a modification of the University Teacher Preparation curriculum, which will enable men to prepare themselves to teach in two subject-matter fields as well as in physical education. It is open to men who have satisfactorily completed the freshman year, and are approved by the department of physical education as physical education majors. Freshmen who desire to become physical education majors should elect Zoölogy 1, 2 as their freshman science course. The satisfactory completion of this curriculum will entitle the student, in addition to his diploma, to a certificate indicating the fact, provided the student has passed certain standard tests in swimming set forth by the American Red Cross.

Sophomores who have been approved as physical education majors should enroll in the section of Zoölogy 17, 18 for majors in physical education as this course is basic to most of the courses in physical education required in the University Physical Education Teacher Preparation curriculum.

Junior physical education majors should include in their programs Physical Education 61, Teaching of Recreational Activities, and either Physical Education 62, Camp Administration, or Physical Education 64, Community Recreation.

Senior physical education majors should include in their programs Physical Education 65, Organization and Administration of Health and Physical Education in Secondary Schools, and Education-Physical Education 93, (93), Directed Teaching of Physical Education on the Campus.

Physical education majors who are candidates for the University Physical Education Teacher Preparation certificate must satisfactorily complete the work of three of five of the Problems of Coaching courses (Physical Education 38, 45, 46, 47, 49) in their junior and senior years.

Where it is possible, student teachers, who are physical education majors, will be given an opportunity to do supervised teaching in physi-

cal education in the field and will be enrolled for Education-Physical Education 94.

GUIDANCE OF STUDENTS PREPARING TO TEACH.—While the university has organized curricula designed to prepare students for the profession of teaching, it also recognizes the fact that there are students who are only interested in meeting state teacher certification requirements. The department of education endeavors to keep its file of teacher certification requirements up to date. Students not following any of the University Teacher-Preparation curricula should, early in their college courses, consult the department of education concerning the requirements of the state in which they desire to teach and the most effective ways in which to meet those requirements.*

* The New Hampshire State board of education grants a license to teach in New Hampshire secondary schools to candidates whose courses have included twelve semester hours of college work in education. All candidates must pass the examination set by the State board in Program of Studies and School Law. They may offer in lieu of examinations certified college courses in Educational Psychology, Methods of Teaching (general or special) and Secondary Education or School Management.

The following courses may be considered as work in Education: Educational Sociology, Educational Psychology, Practice Teaching, Methods of Teaching, History of Education, School Law, School Management, General Methods Course, Special Methods Course, and work in Tests and Measurements.

*UNIVERSITY TEACHER PREPARATION CURRICULUM

Freshman Year

	First Semester Credits		Second Semester Credits
See freshman requirements, page 121			
Suggested elective:			
** Teaching major (*First year*)			
	—		—
	16		16

§ Sophomore Year

Convocation (*Required*)			
Mil. Sci. 3, 4	1½		1½
Phys. Ed. 33, 34 (*For men*)	½		½
Phys. Ed. 3, 4 (*For women*)	1		1
Eng. (*Advanced English*)	3		3
Educ. 41, 42 (*Psychological Principles of Secondary Education*)	3		3
Teaching major (*Second year*)	3		3
First teaching minor (*First year*)	3		3
Electives to meet semester requirements			
	—		—
	16		16

Junior Year

Convocation (*Required*)			
Phys. Ed. 5, 6 (*For women*)	1		1
Educ. 51, 52 (*Social Principles of Secondary Education*)	3		3
Educ. 61, (61) (*Principles and Problems of Teaching in the Secondary School*)	3	or	3
Teaching major (*Third year*)	3		3
First teaching minor (*Second year*)	3		3
Second teaching minor (*First year*)	3		3
Electives to meet semester requirements			
	—		—
	16		16

Senior Year

†Teaching major (*Fourth year*)	3		
‡First teaching minor (*Third year*)	3		
‡Second teaching minor (*Second year*)	3		3
Problems in teaching (*Major*)	3		
Problems in teaching (*Minor*)	3		
Supervised teaching			6–10
Electives to meet semester requirements			
	—		—
	16		16

* This is not a prescribed curriculum but an advisory program of study. The program of this curriculum may be completed by students majoring in any of the departments of the university offering work, the subject matter of which is offered in the secondary school. Students must, consequently, fulfill major requirements. A satisfactory completion of this curriculum will entitle the student to a certificate indicating the fact.

** See section covering department of education in later pages for description of teaching major and teaching minor subjects.

§ General liberal arts students satisfactorily completing this curriculum are released from the sophomore group requirements of this general curriculum and are entitled to receive the degree given to students majoring in their respective subjects.

† Remainder of the total of 24 semester credits required for the satisfactory completion of the curriculum.

‡ Remainder of the total of 12 semester credits required in each teaching minor.

UNIVERSITY PHYSICAL EDUCATION TEACHER PREPARATION CURRICULUM FOR MEN

Freshman Year

	First Semester Credits	*Second Semester Credits*
Zoöl. 1, 2	4	4
Basic course in teaching major (*First year*)		
Other courses in accordance with the General Liberal Arts curriculum for freshman year		
	16	16

Sophomore Year

Convocation (*Required*)		
Mil. Sci. 3, 4	1½	1½
Phys. Ed. 33, 34	½	½
English (*A second year*)	3	3
Educ. 41, 42 (*Psychological Principles*)	3	3
Teaching major (*Second year*)	3	3
Zoöl. 17, 18 (*Human Anatomy and Physiology*)	4	4
Elective (*First teaching minor*)	3	3
	18	18

Junior Year

Convocation (*Required*)		
Educ. 51, 52	3	3
*Educ. 45	2	
P.E. 61 (*Teaching of Recreational Activities*)	3	
P.E. 62 (*Camp Administration*) *or* P.E. 64 (*Community Recreation*)		3
†Problems of coaching (*P.E. 45, 47, or 48*)	2	
†Problems of coaching (*P.E. 38, 46*)		2
Teaching major	3	3
Elective (*First teaching minor*)	3	3
**Ed.-P.E. (93) (*Directed Teaching in Physical Education*)		2
Electives		
	19	19

Senior Year

Teaching major	3	
P.E. 65 (*Organization and Administration of Health and Physical Education in Secondary School*)	3	
†Problems of coaching (*P.E. 71, 73, or 75*)	2	
**Ed.-P.E. 93 (*Directed Teaching in Physical Education*)	2	
Problems in teaching (*Teaching major*)	3	
Electives		
Supervised teaching in major or majors		10
	19	10

* For students planning to teach in the State of New Hampshire.

† Three Problems of Coaching courses are required. One of these courses may be P.E. 38.

** This course is required and may be elected either in the second semester of the junior or senior year or the first semester of the senior year.

COLLEGE OF TECHNOLOGY

GEORGE W. CASE, *Dean*

DEPARTMENTS

ARCHITECTURE
CHEMISTRY
CIVIL ENGINEERING
ELECTRICAL ENGINEERING
MATHEMATICS
MECHANICAL ENGINEERING
PHYSICS
ENGINEERING EXPERIMENT STATION

REQUIREMENTS FOR DEGREES

Baccalaureate Degrees.—Each candidate for a degree must complete 144 semester credits and the courses required in one of the four-year curricula.

Professional Degrees.—Mechanical, electrical, and civil engineering graduates of the University of New Hampshire are eligible to register as candidates for professional degrees in these three branches of engineering.

These degrees will be granted, after the preparation and submission of acceptable theses, to those having not less than four years' satisfactory professional experience subsequent to the bachelor's degree, in which the applicants have wholly or in part supervised, directed or designed engineering work; or have been in responsible charge of instruction or research in engineering. The acceptability of the theses and professional experience is determined by an examining committee.

PROCEDURE.—The procedure for candidates for professional engineering degrees is as follows:

(1) Prepare an outline for a thesis after consultation with the head of the department concerned. This consultation may be by letter.

(2) When the thesis subject is accepted by the head of the department in which the degree is to be taken, the candidate will be registered in the registrar's office. This registration must be completed by October 1st of the academic year in which the degree is to be conferred.

(3) The first draft of the thesis must be submitted to the professor in charge not later than March 1, and the completed thesis in its final form by May 1.

(4) Pass an examination at the university covering the candidate's professional practice and the engineering principles underlying the thesis.

(5) Pay the commencement fee of $5.00 at the business office not later than 12 noon of the Saturday next preceding the date when the degree is conferred.

THESIS.—The thesis must be typewritten upon standard paper, 8½ by 11 inches, medium weight, neatly bound in black cloth, and gilt-

lettered on the first cover with title, name of author, degree sought, and year of graduation. The title page should bear the following statement:

"A thesis submitted to the University of New Hampshire in partial fulfillment of the requirements for the professional degree of mechanical engineer (electrical engineer, civil engineer)."

Whenever a thesis is printed in any periodical, it must be designated as having been accepted as a professional engineering thesis by the University of New Hampshire.

Two bound copies must be filed before commencement day, one with the librarian and one with the head of the department in which the major work is done.

Curricula

The College of Technology offers the following four-year curricula:

Architecture Curriculum.—This curriculum is planned to prepare its graduates for immediate usefulness in the profession of architecture and, while it is highly technical, it does not overlook the need of the professional man for a broad cultural background.

The first three years aim to provide fundamental instruction and discipline in the art, science, theory, and history of architecture, supplemented with such basic courses of study in related departments of the university as shall give a proper background for independent work in architectural design and construction.

The fourth year is devoted chiefly to thesis work in the design of a civic or residential development in harmony with New England traditions, followed by complete working drawings and specifications covering all branches of the work and supplemented with studies of office procedure including contract forms, accounting and bookkeeping, the aim being to prepare the student for immediate service in an architect's office or in some branch of the building construction industry.

Chemistry Curriculum.—This curriculum is intended to fit the student for the career of a professional chemist, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory study is largely individual, and the work of each student is conducted with reference not only to the particular subject he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a training in either German or French to enable him to read with ease the chemical literature; a grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special work in both mechanical and electrical engineering and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference library and chemical periodicals.

Civil Engineering Curriculum.—This curriculum is designed to

give the student theoretical and practical training in the principles upon which the practice of civil engineering is based, and to allow him the opportunity to apply these principles to problems of professional practice in the classroom, in the design room and in the field.

Civil engineering, the oldest of the engineering professions, still covers a broad field of activity, including topographical, structural, transportation, hydraulic, and sanitary engineering. This curriculum places about equal emphasis upon each of these various branches and allows the student some opportunity to develop his special interests through the thesis requirement.

Electrical Engineering Curriculum.—The electrical engineering curriculum is intended to meet the demands of young men fitting themselves for professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the courses of the curriculum are brought to the attention of the student in such a manner as not only to emphasize the present needs of the practitioner and engineer, but to give him the principles needed to understand the constantly increasing number of new problems that require solution.

Mechanical Engineering Curriculum.—The mechanical engineering curriculum is intended to train young men for positions of responsibility in the field of the mechanical industries, and is designed to fit them socially for their proper places in the world. The courses in the curriculum are scientific, including mathematics, physics and chemistry, and technical, including drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering. Two years of economics are available as alternates.

Instruction is given by means of recitations, lectures and laboratory work supplemented by illustrated lectures and assigned reading. Throughout the curriculum the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, electrical, chemical and physical laboratories.

Engineering Experiment Station.—The Engineering Experiment station was established for the purpose of making available the advisory assistance of heads of departments and experienced men in the faculty of the College of Technology, and the use of laboratory facilities of these departments for service and assistance of New Hampshire industries and the people of New Hampshire in solving their technical problems.

Alumni Representation.—An advisory committee of alumni of the College of Technology, composed of men in direct contact with industry and practical professional affairs, serves to keep the faculty in touch with developments in the several fields which attract our graduates. Members of this committee also serve as consultants when important

changes in curricula, faculty personnel and policies of administration are considered. The members are:

Henry H. Calderwood, B.S. in E.E., '01, 16 Prospect Street, Saugus, Mass.

John T. Croghan, B.S. in M.E., '08, 574 Chestnut Street, Waban, Mass.

Robert A. Neal, B.S. in E.E., '10, 286 Burlington Road, Wilkinsburg, Pa.

Lester A. Pratt, Ph.D., '09, 13 Wildwood Street, Winchester, Mass.

ARCHITECTURE

Freshman Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Freshman Assembly (*Required First Semester*)		
Phys. Ed. 31, 32	½	½
Mil. Sci. 9, 10	1½	1½
Math. 1, 2 (*Algebra and Trigonometry*)	4	4
Eng. 1, 2 (*Composition*)	3	3
*Chem. 1 (*Inorganic Chemistry*)	4	
*M.E. 1 (*Engineering Drawing*)	2	
*M.E. S1 (*Wood Shop*)	3	
Arch. 2 (*Elements of Architecture*)		2
Arch. 24 (*Shades and Shadows, Perspective*)		2
Arch. 26 (*Architectural Design*)		3
Arch. 38 (*Freehand Drawing*)		2
	18	18

Sophomore Year

Convocation (*Required*)		
Phys. Ed. 33, 34	½	½
Mil. Sci. 11, 12	1½	1½
Eng. 35 (*Public Speaking*)	2½	
Phys. 3, 4 (*Physics*)	4	4
M.E. 12 (*Mechanics*)		4
Arch. 3 (*Meaning of Architecture*)	2	
Arch. 27, 28 (*Architectural Design*)	6	6
Arch. 39, 40 (*Freehand Drawing*)	2	2
	18½	18

Junior Year

Convocation (*Required*)		
Elective	4	
M.E. 12 (*Mechanics*)		4
Arch. 9 (*Architectural Composition*)	2	
Arch. 14 (*Domestic Architecture*)		2
Arch. 19, 20 (*Building Construction*)	3	3
Arch. 29, 30 (*Architectural Design*)	6	6
Arch. 41, 42 (*Water Color and Modeling*)	3	3
	18	18

Senior Year

Elective	3	3
Eng. (41) (*Expository Writing*)		2
M.E. 41 (*Heating and Ventilating*)	2	
Arch. 7 (*History of American Architecture*)	2	
Arch. 15 (*Professional Practice*)	2	
Arch. 16 (*Specifications and Appraising*)		2
Arch. 19, 20 (*Building Construction*)	3	3
Arch. 21 (*Architectural Seminar*)	1	
Arch. 31, 32 (*Architectural Design and Thesis*)	6	6
Arch. 44 (*Model Making*)		2
	19	18

* A course approved by the department head may be substituted for M.E. 1, M.E. S1, Chem. 1.

COLLEGE OF TECHNOLOGY

Recommended Electives

	First Semester Credits		Second Semester Credits
Arch. 37 (*Freehand Drawing*)	2		
Arch. 49, 50 (*Pottery*)	3		3
C.E. 9 or (9) (*Plane Surveying*)	2	or	2
Econ. 1, 2 (*Principles of Economics*)	3		3
Econ. 45 (*Business Organization and Finance*)	2		
Eng. 3, 4 (*Survey of English Literature*)	3		3
Eng. 29, 30 (*Survey of Art*)	3		3
Geol. 7, (7) (*General Geology*)	3	or	3
Hist. 11 (*Ancient Orient*)	3		
Hist. 12 (*Greece*)			3
Hist. 13, 14 (*Roman*)	3		3
Hist. 15, 16 (*Medieval*)	3		3
Hist. 17, 18 (*Renaissance*)	3		3
Hist. 19, 20 (*Modern European*)	3		3
Hort. 28 (*Elementary Landscape Design*)			3
Modern Language (*A year's work*)			
Music (*A year's work*)			
Phil. 49 (*Introduction to Philosophy*)	3		
Phil. 84 (*Ethics*)			3
Phys. 54 (*Acoustics*)			3
Pol. Sci. 3, 4 (*American Government*)	3		3
Soc. 1 (*Principles of Sociology*)	3		
Soc. 2 (*Social Psychology*)			3

TECHNOLOGY CURRICULUM IN CHEMISTRY

Freshman Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Freshman Assembly (*Required First Semester*)		
Phys. Ed. 31, 32	½	½
Mil. Sci. 9, 10	1½	1½
Eng. 1, 2 (*Composition*)	3	3
Math. 5, 6 (*First Year Mathematics*)	5	5
Chem. 1, 4 (*Inorganic Chemistry*)	4	6
M.E. 1 (*Engineering Drawing*)	2	
*M.E. S1 (*Shop Work*)	2	
*Geol. (7) (*General Geology*)		3
	18	19

Sophomore Year

Convocation (*Required*)		
Phys. Ed. 33, 34	½	½
Mil. Sci. 11, 12	1½	1½
Chem. 21 (*Semi-micro Qualitative Analysis*)	4	
Chem. 22 (*Quantitative Analysis*)		4
Math. 7, 8 (*Calculus*)	3	3
Phys. 7, 8 (*General Physics*)	4	4
Phys. 9, 10 (*Physics Laboratory*)	3	3
Ger. 1, 2, or 5, 6 (*German*)	3	3
	19	19

Junior Year

Convocation (*Required*)		
Chem. 47, 48 (*Organic Chemistry*)	5	5
Chem. 31 (*Quantitative Analysis*)	5	
Chem. 32 (*Technical Quantitative Analysis*)		5
Chem. 61, 62 (*Introductory Theoretical Chemistry*)	2	2
E.E. 33 (*Electrical Engineering*)	4	
Phys. 52 (*Electrical Measurements*)		3
Approved elective	3	3
	19	18

Senior Year

Chem. 83, 84 (*Physical Chemistry*)	5	5
Chem. 71, 72 (*Unit Processes*)	2	2
Chem. 73, 74 (*Unit Operations*)	3	3
Chem. 87, 88 (*Thesis, Bibliography and Seminar*)	6	6
Approved elective	3	3
	19	19

* A course approved by the department head may be substituted for M.E. S1, Geol. (7).

COLLEGE OF TECHNOLOGY

CIVIL ENGINEERING

Freshman Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Freshman Assembly (*Required First Semester*)		
Phys. Ed. 31, 32	½	½
Mil. Sci. 9, 10	1½	1½
Math. 5, 6 (*First Year Mathematics*)	5	5
Chem. 1, 2 (*General Chemistry*)	4	4
Eng. 1, 2 (*Composition*)	3	3
M.E. 1, 2 (*Engineering Drawing*)	2	2
M.E. S1 (*Shop Work*)	3	
C.E. 2 (*Surveying*)		3
	19	19

Sophomore Year

Convocation (*Required*)		
Phys. Ed. 33, 34	½	½
Mil. Sci. 11, 12	1½	1½
C.E. 3, 4 (*Surveying*)	3	3
C.E. 6 (*Surveying*)		3
Math. 7, 8 (*Calculus*)	3	3
Phys. 7, 8 (*General Physics*)	4	4
Phys. 9, 10 (*Physics Laboratory*)	3	3
Geol. 7 (*General Geology*)	3	
	18	18

Junior Year

Convocation (*Required*)		
C.E. 11 (*Surveying*)	2	
C.E. 15 (*Engineering Materials*)	2	
C.E. 22 (*Hydraulics*)		4
C.E. 27, 28 (*Theory of Structures*)	4	4
C.E. 41, 42 (*A.S.C.E.*) (*Required*)		
M.E. 9, 10 (*Applied Mechanics*)	3	4
M.E. 21 (*Heat Power Engineering*)	3	
E.E. 36 (*Electrical Machinery*)		4
Econ. 45 (*Business Organization and Finance*)		
Econ. 46 (*Public Regulation of Industry*)		
Econ. 47, 48 (*Economic History of the Working Classes*) or Mil. Sci. 13, 14 (*Coast Artillery*)	3	3
	17	19

Senior Year

C.E. 31 (*Highway Engineering and Transportation*)	4	
*C.E. 32 (*Transportation Engineering*)		3
C.E. 33, 34 (*Hydraulic and Sanitary Engineering*)	4	4
C.E. 35 (*Structural Design*)	4	
C.E. 36 (*Reinforced Concrete Structures*)		4
C.E. 38 (*Thesis*)		2
C.E. 43, 44 (*A.S.C.E.*) (*Required*)		
Eng. 41 (*Expository Writing*)	2	
*Mil. Sci. 15, 16 (*Coast Artillery*)	3	3
*M.E. 45, 46 (*Management*)	2	3
Approved elective	2	2
	18 or 19	18

* Students electing Mil. Sci. 15, 16 are not required to register for M.E. 45 and C.E. 32.

UNIVERSITY OF NEW HAMPSHIRE

ELECTRICAL AND MECHANICAL ENGINEERING

Freshman Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Freshman Assembly (*Required First Semester*)		
Phys. Ed. 31, 32	½	½
Mil. Sci. 9, 10	1½	1½
Math. 5, 6 (*First Year Mathematics*)	5	5
Chem. 1, 2 (*General Chemistry*)	4	4
Eng. 1, 2 (*Composition*)	3	3
M.E. 1, 2 (*Engineering Drawing*)	2	2
M.E. S1, S2 (*Wood, Forge and Machine Work*)	3	3
	19	19

COLLEGE OF TECHNOLOGY

ELECTRICAL ENGINEERING

Sophomore Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Phys. Ed. 33, 34	½	½
Mil. Sci. 11, 12	1½	1½
Math. 7, 8 (*Calculus*)	3	3
Phys. 7, 8 (*General Physics*)	4	4
Phys. 9, 10 (*General Physics Laboratory*)	3	3
E.E. 1, 2 (*Electrical Engineering*)	2	2
M.E. 3 (*Machine Drawing*)	2	
M.E. 4 (*Kinematics*)		3
M.E. (S17) (*Machine Work*)		2
C.E. 9 (*Surveying*)	2	
	18	19

Junior Year

Convocation (*Required*)		
E.E. 3, 4 (*Electrical Engineering*)	3	3
E.E. 13, 14 (*Electrical Problems*)	2	2
E.E. 15, 16 (*A.I.E.E.*) (*Required*)		
E.E. 23, 24 (*Electrical Laboratory*)	2	2
M.E. 9, 10 (*Mechanics*)	3	4
M.E. 25, 26 (*Heat Power Engineering*)	3	4
M.E. 27 (*Mechanical Laboratory*)	2	
Econ. 45, 47 (*Business Organization and Economic History*) and Econ. 46, 48 (*Public Regulation of Industry and Economic History*), or...	3	3
Math. 51, 52 (*Differential Equations and Vector Analysis*) or Mil. Sci. 13, 14 (*Coast Artillery*)		
	18	18

Senior Year

E.E. 5 (*Electrical Engineering*)	3	
*E.E. 7, 8 (*Electronics and Communication*)	3	5
*E.E. 10 (*Advanced Circuit Theory*)		4
E.E. 12 (*Illumination*)		2
E.E. 17, 18 (*A.I.E.E.*) (*Required*)		
*E.E. 19, 20 (*Thesis*)	3	3
*E.E. 25, 26 (*Electrical Laboratory*)	4	4
*E.E. 28 (*Advanced Electronics Laboratory*)		4
Phys. 51 (*Theory of Electrons*)	2	
Phys. 52 (*Electrical Measurements*)		3
C.E. 23 (*Hydraulics*)	2	
Eng. (41) (*Expository Writing*)		2
‡M.E. 45, 46 (*Management*)	2	3
Mil. Sci. 15, 16 (*Coast Artillery*)	3	3
Approved non-technical elective	3	3
	19	18

‡ Students electing Mil. Sci. 15 are not required to register for M.E. 45.
* E.E. 8, 10, 19, 20, 26 and 28 are elective courses.

MECHANICAL ENGINEERING

Sophomore Year

	First Semester Credits	*Second Semester Credits*
Convocation (*Required*)		
Phys. Ed. 33, 34	½	½
Mil. Sci. 11, 12	1½	1½
Math. 7, 8 (*Calculus*)	3	3
Phys. 7, 8 (*General Physics*)	4	4
Phys. 9, 10 (*General Physics Laboratory*)	3	3
M.E. 3 (*Machine Drawing*)	2	
M.E. 4 (*Kinematics*)		3
M.E. 5, 6 (*Mechanical Laboratory*)	1	1
M.E. S17 (*Machine Work*)	2	
C.E. (9) (*Surveying*)		2
	17	18

Junior Year

Convocation (*Required*)		
A.S.M.E. 1, 2 (*Required*)		
E.E. 37, 38 (*Electrical Machinery*)	4	4
M.E. 7, 8 (*Mechanics*)	4	4
M.E. 23, 24 (*Thermodynamics*)	3	3
M.E. 29, 30 (*Mechanical Laboratory*)	2	1
M.E. 39 (*Heating and Ventilating*)	2	
C.E. 24 (*Hydraulics*)		3
Econ. 45, 47 (*Business Organization and Economic History*) and Econ. 46, 48 (*Public Regulation of Industry and Economic History*), or Mil. Sci. 13, 14 (*Coast Artillery*)	3	3
	18	18

Senior Year

A.S.M.E. 3, 4 (*Required*)		
M.E. 13 (*Manufacture of Iron and Steel*)	3	
M.E. 15, 16 (*Machine Design*)	3	3
M.E. 32 (*Mechanical Laboratory*)		2
M.E. 33, 34 (*Power Plants*)	2	2
M.E. 35, 36 or 37, 38 (*Automotive Engineering or Aeronautics*)	3	3
M.E. 45, 46 (*Management*)	2	3
M.E. 49 (*Thesis*)	3	
Eng. (41) (*Expository Writing*)		2
Mil. Sci. 15, 16 (*Coast Artillery*) or Approved elective	3	3
	18	18

COLLEGE OF TECHNOLOGY

SUMMER SCHOOL

The University of New Hampshire Summer school (the fifteenth session of which will be held from June 27 to August 5, 1938) offers courses in most departments of all three colleges. The Summer school is designed to meet the needs of:

1. Teachers, superintendents and supervisors of elementary and secondary schools.
2. Students in the University of New Hampshire and in other colleges who desire to utilize the vacation period for the purpose of anticipating courses or supplying deficiencies.
3. Graduate students who may earn the degree of master of arts, master of science or master of education for work done exclusively during summer sessions.
4. Candidates for admission to any of the colleges of the university who desire to obtain advanced standing or to complete some special requirement for admission.

For Summer school bulletin, information as to particular courses, etc., address the Registrar, University of New Hampshire, Durham, N. H.

EXTENSION COURSES FOR UNIVERSITY CREDIT

In response to the insistent demand of the people of the state the trustees of the university have approved offering extension courses for university credit. Professors are sent out to centers within the state where there is a demand for classes to be formed. At present the courses offered will depend on the teaching schedules of the various departments.

DESCRIPTION OF COURSES

(Alphabetically Arranged)

The title of the course is given in capital letters and small capital letters. The numeral designates the particular course. Odd numerals indicate courses offered in the first semester. Even numerals indicate courses offered in the second semester. Numerals enclosed in parentheses indicate that a course is repeated in the semester following. Thus, course 1 (1) is offered in the first semester and is repeated in the second semester.

Courses numbered 1–50 are open to undergraduates only. Courses numbered 51–100 are open to undergraduates and graduate students. Courses numbered 101–200 are for graduate students only. Courses numbered above 200 are open only to students in the Two Year Curriculum in Agriculture.

Following the title of each course is the description of the work given and the name of the instructor.

The next paragraph gives the following information in the order indicated: (1) prerequisites, if any; (2) the curricula in which the course is required and the undergraduate year in which it should be taken; (3) the number of hours of recitations or laboratory periods required each week; (4) the number of semester credits the course will count in the total required for graduation. Lectures and recitations are fifty minutes in length. Laboratory periods are two and one-half hours in length.

Abbreviations have been employed to indicate the number of hours of work required of students in lecture, recitation and laboratory and the number of credits given for satisfactory completion of each course. These abbreviations should be interpreted as follows:

Cr.....Credit
Lab.....Laboratory
Lec.....Lecture
Prereq.....Prerequisite
Rec.....Recitation

All courses (unless otherwise marked) are open to students who have passed the prerequisites.

An elective course will be given only when there is a minimum of five students registered therefor.

ACCOUNTING

(See Economics)

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

THOMAS G. PHILLIPS, *Professor;* STANLEY R. SHIMER, *Assistant Professor;* HENRY A. DAVIS, *Assistant;* ELWOOD C. PIERCE, *Graduate Assistant;* WILLARD S. BREON, *Graduate Assistant.*

1. AGRICULTURAL CHEMISTRY. An introduction to organic chemistry and a brief survey of biological chemistry. Mr. Shimer, Mr. Phillips.

Prereq.: Chemistry 2. Required of sophomores in agriculture. 3 lec.; 2 lab.; 5 cr.

2. AGRICULTURAL CHEMISTRY. The chemistry of plant growth, soils and fertilizers. Mr. Phillips, Mr. Davis.

Prereq.: Agricultural chemistry 1 or its equivalent. Elective. 2 lec.; 1 lab.; 3 cr.

4. AGRICULTURAL CHEMISTRY. The chemistry of animal nutrition. Mr. Shimer.

Prereq.: Agricultural chemistry 1 or its equivalent. Elective. 2 lec.; 1 lab.; 3 cr.

5. ORGANIC AND BIOLOGICAL CHEMISTRY. An introduction to organic chemistry and a brief survey of biological chemistry. Mr. Shimer.

Prereq.: Chemistry 2. Required of juniors in home economics. 3 lec.; 2 lab.; 5 cr.

6. CHEMISTRY OF FOOD AND NUTRITION. The chemistry of food materials and of digestion, absorption, metabolism and excretion. Mr. Shimer.

Prereq.: Agricultural chemistry 5 or its equivalent. Elective for home economics students. 2 lec.; 1 lab.; 3 cr.

51, 52. PHYSIOLOGICAL CHEMISTRY. The chemistry of fats, carbohydrates and proteins, colloids, enzyme action, digestion, metabolism and excretion. The qualitative and quantitative examination of blood and urine. Mr. Shimer, Mr. Davis.

Prereq.: Satisfactory preparation in organic chemistry and quantitative analysis. 3 lec.; 2 lab.; 5 cr.

53, 54. AGRICULTURAL ANALYSIS. A study of the methods of analysis of soils, fertilizers, feeding stuffs, and other products important in agriculture. Mr. Phillips, Mr. Shimer.

Prereq.: Satisfactory preparation in organic chemistry and quantitative analysis. 1 lec.; 3 lab.; 4 cr.

55. PLANT CHEMISTRY. A study of the chemistry of plant growth and of methods for the analysis of plant materials. Mr. Phillips.

Prereq.: Agricultural chemistry 2. 2 lec.; 2 lab.; 4 cr.

For courses primarily for graduate students, see catalog of the Graduate school.

AGRICULTURAL ECONOMICS

M. Gale Eastman, *Professor;* Harold C. Grinnell, *Assistant Professor;* Perley F. Ayer, *Instructor.*

1. Rural Economics. History and economy in the development of rural living, with special emphasis on the relation of current public problems to the agricultural industry. Mr. Grinnell.

Required of juniors in certain curricula. 2 lec.; 2 cr.

3. Farm Accounting. A practical course in accounting methods as applied to the farm business; inventory and credit statement, farm records, double entry proprietorship accounts, federal income tax returns and single enterprise cost accounts. Mr. Grinnell.

Required of juniors in animal husbandry, general agriculture and teacher training. 1 lab.; 2 cr.

4. Farm Management. Deals with the organization of the farm business from the point of view of efficiency and greatest continuous profit. Types of farming, factors affecting financial success, measures of financial success, cropping systems, livestock problems, labor problems, etc. Practical problems in analyzing typical farm businesses and in the reorganization of at least one near-by farm. Mr. Grinnell.

Required of seniors in agriculture, except those registered in agricultural chemistry, botany, entomology, forestry and poultry. 2 lec.; 1 lab.; 3 cr.

5. Coöperative Marketing. The essential characteristics of cooperative development in this country, something of its present importance, and the principles underlying sound organization. Types of coöperatives, legal phases and problems in corporation finance are emphasized. Mr. Grinnell.

Required of seniors in agriculture, except those registered in agricultural chemistry, botany, entomology, forestry, and poultry. Elective for other students. 2 lec.; 2 cr.

7. Agricultural Statistics. An elementary course to acquaint the agricultural student with some every-day problems of chance in biological phenomena and to give him some immunity against snap judgments, and some basis for the interpretation of current research information. Mr. Eastman.

Elective for seniors in agriculture. 1 lab.; 1 cr.

8. The Rural Community. A consideration of farming as a mode of life; the attitudes, problems and satisfactions of rural people; social institutions and human-relationship organizations, including agricultural extension. Lectures, reference work, and actual laboratory demonstrations will be provided. The state extension staff will coöperate. Mr. Eastman, Mr. Ayer.

Required of home economics extension and agricultural teacher preparation seniors. Elective for other agricultural seniors. 2 lec.; 1 lab.; 3 cr.

51, 52. Special Agricultural Economics. Graduate or undergraduate credit to satisfy a student's needs may be obtained in this course in special cases by permission of the head of the department. Mr. Eastman, Mr. Grinnell.

Hours of meeting and number of credits to be arranged.

AGRONOMY AND AGRICULTURAL ENGINEERING

Ford S. Prince, *Professor;* Leroy J. Higgins, *Assistant Professor;* Walter T. Ackerman, *Assistant Professor;* George M. Foulkrod, *Assistant Professor.*

Agronomy

1. Soils. A study of the nature and properties of soils, giving special consideration to the fundamental physical, chemical and biological processes and characteristics of productive soils. The subject matter will be of an introductory nature to serve all students in the College of Agriculture and will be fundamental for those who continue in agronomy work. Laboratory work will put into application some of the more important principles considered in class. Mr. Higgins.

Required of juniors in agriculture, with a few exceptions. 2 lec.; 1 lab.; 3 cr.

2. Fertilizers. A study of the occurrence and function of plant food materials in soils and the use of manure and fertilizers in crop production. Special attention will be given to the production, care and preservation of manure, to the compounding of fertilizers, and the response of different types of crops to the several materials now used to stimulate crop production. Mr. Prince.

Prereq.: Agricultural chemistry 1. Required of juniors in agriculture, with a few exceptions. 2 lec.; 2 cr.

3, 4. Crop Production. First semester comprises an introduction to the study of crops in general, considering distribution, choice, growth processes, cropping practices, preparation of seed beds, care, improvement and breeding. In the latter part of the semester root crops and potatoes will be considered in detail. Second semester continues in more detail concerning forage, cereals, and other crops grown in New England. Laboratory work consists of practice in identification and judging. Hayland and pasture management will be emphasized. Mr. Higgins.

Prereq.: Agronomy 3. Required of juniors in agriculture, with a few exceptions. 2 lec.; 1 lab.; 3 cr.

5. Soil Utilization. A study of the classification, utilization and management of soils, particularly those of New Hampshire. Available

literature will be cited. Laboratory will consist of practical soil management and utilization problems, field trips and mapping. Mr. Higgins.

Prereq.: Agronomy 1. Elective for seniors. 1 lec.; 1 lab.; 2 cr.

6. Seed Testing. A study of the official method of analyzing agricultural seeds for purity and germination, involving studies in the identification of seeds, as well as the technique of using equipment in weighing, germinating, counting, estimating, etc., for official reports. Mr. Higgins.

Prereq.: Botany 2 and Agronomy 4. Elective for a very limited number of seniors. Hours arranged. 1 lab.; 1 cr.

7, 8. Agronomic Literature. A special study of literature relating to soils and crops. Designed to meet the needs of students interested in some phase of agronomy. Practice in looking up literature and in the preparation of reports and abstracts will be given. Mr. Prince.

Prereq.: Agronomy 1, 2, 3, 4. Elective for seniors. Number of credits to be arranged.

Agricultural Engineering

The laboratories and class rooms for agricultural engineering are on the first and second floors of Pettee hall. Here are provided facilities for the study of farm power, equipment, building construction and maintenance, drawing and surveying and other engineering problems related to farm enterprises. Drainage levels for laying out drains, plane tables for mapping plots of land, polar planimeters for measuring plotted areas, steel tapes, chains, range poles, etc., are available for practical work in farm surveying, mapping and drainage problems.

1. Basic Agricultural Engineering Applications. The entire field of agricultural engineering is covered in such a manner that the student will be familiar with the methods most commonly employed in solving every-day farm problems. Farm mechanics; farm mapping; farm water supply and sanitation; farm machinery and power applications; farm drawing and sketching; and types and purposes of farm buildings are covered in theory and demonstration. Mr. Foulkrod.

Elective for all agricultural freshmen and sophomores. 2 lec.; 1 lab.; 3 cr.

2. Farm Power and Machinery. A study of the farm tractor and its special tools, together with a complete review of the development of the machines at present available to the farmer, with special emphasis on those of economic importance in this section. Care, repair and adjustment will be carefully considered in the laboratory, supplemented by operation under actual field conditions.

Four to six makes of modern tractors, several gas engines, light plants and a large variety of field machines are available. Mr. Foulkrod.

Prereq.: Agricultural engineering 1. Recommended for seniors in general agriculture, animal husbandry, dairy husbandry, and poultry husbandry. Elective for all other agricultural juniors and seniors. 1 lec.; 1 lab.; 2 cr.

3. Electric Farm Power. A course embracing the comparative utility of individual plant and central station current; rural line extension procedure; proper wiring for farm applications with particular emphasis on household, farmstead, dairying, poultry farm and horticultural uses. Special attention will be given the economics of various methods, cost of operation, care and maintenance of equipment, quality of results obtainable and effect on farm labor problem. Mr. Ackerman.

Recommended for seniors in animal husbandry, dairy husbandry and horticulture, and juniors in poultry husbandry. Elective for all other agricultural juniors and seniors. 2 rec.; 1 lab.; 3 cr.

4. Agricultural Drawing. This course is designed to meet the needs of all agricultural students, and includes beside the elementary principles of drawing and lettering the application of these principles to the making of charts, graphs, maps, machines and shop sketches, as well as to plans for minor farm buildings. Mr. Foulkrod.

Recommended for all sophomores in agriculture. 1 lab.; 1 cr.

5. Farm Buildings and Equipment. The lectures on types and purposes of farm shelters, materials, equipment and sanitary requirements will be paralleled by drafting room work in design and laboratory work in construction, with special attention to remodeling existing buildings. Mr. Foulkrod.

Prereq.: Agricultural engineering 4. Elective for all juniors and seniors in agriculture. 1 lec.; 1 lab.; 2 cr.

6. Farm Mechanics Shop. Planned to give the teacher preparation senior the greatest amount of practice in farm mechanics in the shortest possible time; to develop his skill with tools, and his general knowledge of farm mechanics applications. A modern farm shop is employed. Mr. Foulkrod.

Required of agricultural teacher preparation seniors. 2 lab.; 2 cr.

ANIMAL HUSBANDRY

Loring V. Tirrell, *Professor;* Carl L. Martin, *Assistant Professor.*

1. Types and Breeds of Livestock. A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. Mr. Tirrell.

Recommended for freshmen in agriculture. 2 lec 1 lab.; 3 cr.

2. Livestock Judging. The work consists of a study of the principles and practice of judging horses, beef cattle, sheep and swine, and of the market classes and grades of horses and meat animals. The judging teams which represent the university at such expositions as the Eastern States at Springfield and the International at Chicago are selected from students taking courses 2 and 4. For a part of the laboratory work, trips are taken to some of the best breeding establishments in New England. Mr. Tirrell.

Prereq.: Animal husbandry 1. Required of sophomores electing animal husbandry. 1 lab.; 1 cr.

3. Feeds and Feeding. A study of the character, composition and digestibility of feedstuffs, and the methods of feeding different kinds of farm animals. Numerous samples of grains and by-products are used for the purpose of familiarizing the students with the different feedstuffs. Practice is given in calculating rations for various purposes. Mr. Tirrell.

Required of seniors in animal husbandry, dairy husbandry, general and teacher preparation curricula. 3 lec.; 3 cr.

4. Advanced Livestock Judging. This is a continuation of 2 and is open to students who have previously taken 2. Mr. Tirrell.

1 lab.; 1 cr.

5, 6. Veterinary Science. First semester comprises systematic anatomy of the different farm animals, animal physiology, and the prevention of animal diseases. This course is especially designed for the agricultural student to acquaint him with the anatomical structures of the domestic animals, the functions of the organs of the body, and preventive veterinary medicine. The second semester is devoted to a study of the more common diseases of farm animals, their prevention and control. Mr. Martin.

Required of juniors in animal husbandry. Elective for others. 3 lec.; 3 cr.

7. Animal Breeding. A study of the principles and practices of breeding farm animals, including cross-breeding, in-breeding, selection, inheritance, breed analysis, reproductive efficiency, fertility, sterility, Mendelism in relation to farm animals, acquired characters and variation. Practice is given in tracing and studying pedigrees. Mr. Tirrell.

Required of seniors in animal husbandry. 2 lec.; 1 lab.; 3 cr.

8. Meat and Its Products; Livestock Markets. A study of meat, farm slaughter, curing and identification of cuts; livestock markets, stockyards and transportation. Occasional trips will be taken to slaughter houses and packing plants. Mr. Tirrell.

Required of seniors in animal husbandry. Elective for others. 2 lec.; 2 cr.

9. Management of Horses and Beef Cattle. Lectures and recitations upon the care of brood mares and cows, management of stallions and bulls, the breaking and training of colts, preparation of animals for the show ring, the management of pure-bred beef herds, and the feeding and handling of steers. Mr. Tirrell.

Required of seniors in animal husbandry. Elective for others. 2 lec.; 1 lab.; 3 cr.

10. Sheep and Swine Husbandry. A consideration of the judging, breeding, feeding, management and preparation for the show ring of sheep and swine, with special reference to New Hampshire conditions. Mr. Tirrell.

Required of seniors in animal husbandry. Elective for others. 2 lec.; 1 lab.; 3 cr.

12. Animal Husbandry Seminar. Library and reference work and the preparation of papers on various animal husbandry subjects of timely importance. Mr. Tirrell.

Prereq.: Animal husbandry 3 and 7. Required of seniors in animal husbandry. Elective for others. 1 lec.; 1 cr.

ARCHITECTURE

Eric T. Huddleston, *Professor*, Arnold Perreton, *Assistant Professor*, George R. Thomas, *Assistant Professor*.

The department of architecture is well equipped to meet the needs of the courses offered. The drafting rooms are supplied with tables and lockers, and the free-hand studio with suitable stands and easels. For free-hand drawing there is a good supply of geometric models, and for advanced work in charcoal drawing the nucleus of a good collection of plaster casts exists, consisting of historic ornament, details of plant and animal life and of the human form. For special work in this subject there is available the museum of casts, consisting of examples of antique and modern sculpture. For work in architectural drawing an excellent library of books, periodicals, and blue prints of all classes of buildings are available for reference and use in the drafting rooms, while a goodly collection of samples of building materials is being added from time to time.

2. Elements of Architecture. A lecture course with assigned reference work dealing with the analysis of the elements of architecture. By means of illustrated lectures the basic modern building materials, and the construction and design fundamentals of architectural elements such as walls, columns, floors, ceilings, roofs, doors, windows, ornament, etc., and their respective terminology are considered. Also, by means of the students' required collection of architectural illustrations the varied application of the elements and their fundamental relation to the contemporary architectural usage is shown. Mr. Perreton.

Elective by permission. Required of freshmen in architecture. 2 rec.; 2 cr.

3. The Meaning of Architecture. Lectures giving a general view of the architectural profession, its allied arts, and the building construction industry; library research and discussions on current topics of architectural interest affording the student a better understanding of the aims and purpose of the various courses in the architectural curriculum. Mr. Huddleston.

Elective by permission. Required of sophomores in architecture. 2 lec.; 2 cr.

5, 6. History of European Architecture. Lectures with assigned reading and sketches on the historical development of the different periods of European architecture with an analysis of the environment, the style evolved and the chief architectural contributions each period made toward a constructive and artistic advance in architectural expression. Mr. Perreton.

Elective by permission. Required of juniors in architecture. 2 rec.; 2 cr.

7. History of American Architecture. Lectures with assigned reading and sketches on the historical development of the different periods of American architecture. A study is made of the social conditions, the type of architecture, and the work of the outstanding architects as developed in the various geographical sections of each period, followed with an analysis of the chief contribution each period made towards a constructive and artistic advance in architectural expression. Mr. Perreton.

Elective by permission. Required of seniors in architecture. 2 rec.; 2 cr.

9. Architectural Composition. Lectures and discussions on the analysis of the principles governing architectural design, and methods of applying these principles to the current design course to achieve an architectural expression which reveals the function, beauty and character of every type of modern building. Mr. Perreton.

Required of juniors in architecture. 2 rec.; 2 cr.

14. Domestic Architecture. Lectures and recitations devoted to a brief study of the history of domestic architecture with special emphasis placed on early American housing as a basis for an appreciation of the New England Colonial architecture. Further study is given to modern housing problems, including the relation of the house plan to the individual site, to the garden, to accessory buildings, and to the community, with special consideration given to economy in design and material and the need for intelligent coöperation on the part of the prospective owner with the architect and builder. Mr. Huddleston.

Elective by permission. Required of juniors in architecture. 2 rec.; 3 cr.

15. Professional Practice. Discussions and assigned reading covering the personal, ethical, business, and legal relations of the architect with clients, contractors, craftsmen, etc., and the relations that should exist between the architect and the community in which he lives; followed by studies of office procedure in the conduct of an architect's office, i.e., contract forms, bookkeeping, and accounting as they apply to his professional work. Mr. Huddleston.

Required of seniors in architecture. 2 rec.; 2 cr.

16. Specifications and Appraising. A study of the fundamentals of specification writing and the preparation of an outline specification adapted to the requirements of the thesis problem designed by each student. Methods of estimating and appraising buildings, both before and after construction, will be studied. Mr. Huddleston.

Required of seniors in architecture. 2 rec.; 2 cr.

19, 20. Building Construction. The principles of structural design and an analysis of structural systems as applied to wood frame house construction, light and heavy timber construction, steel and reinforced concrete construction.

While emphasis is placed upon the principles involved in the selection of structural systems in the solution of various types of building construction problems, detailed study is made of the practical methods used in applying the various materials of construction as they occur in modern practice, and the introduction of the mechanical equipment for plumbing, heating, ventilating, and electrical systems. Mr. Huddleston.

Prereq.: Architecture 28 and Mechanical engineering 12.
Required of juniors and seniors in architecture. 3 lab.; 3 cr.

21. Architectural Seminar. Library research and the preparation of papers on approved subjects related to the thesis problems. Each student is required to present and lead the discussion on his subject. Mr. Huddleston.

Required of seniors in architecture. 2 rec.; 2 cr.

24. Shades, Shadows and Perspective. Determination of conventional shades and shadows as they occur in architectural drawings; problems illustrating the architectural application of descriptive geometry; theory of perspective and practical construction of perspective drawings. Rendering in wash of problems illustrating light, shade, and shadow. Mr. Thomas.

Elective by permission. Required of freshmen in architecture. 1 lec.; 2 lab.; 3 cr.

26. Freshman Architectural Design. Drafting room exercises progressing in parallel with the Lecture on Elements of Architecture (Architecture 2). Instruction in the accepted methods of architectural

drafting. Measured drawings showing the relation of material, construction and design, drawn from field sketches and photographs of existing elements. Design studies of single and combined elements serving specific functions. Mr. Perreton.

Architecture 2 must be taken either in parallel or as a prerequisite. Elective by permission. Required of freshmen in architecture. 2 lab.; 2 cr.

27, 28. Sophomore Architectural Design. A progressive series of competitive problems in the composition of architectural elements in interior and exterior design, with special emphasis given to the correct use of the modern materials and structural forms of design. Mr. Thomas.

Prereq.: Architecture 24 and 26. Required of sophomores in architecture. 6 lab.; 6 cr.

29, 30. Junior Architectural Design. A progressive series of competitive problems in the application of the principles of architectural composition to the design of contemporary buildings. Special emphasis is given here to the correlated expression of the functional planning and aesthetic composition in the design of residential, recreational, commercial and municipal buildings of contemporary town and small city scale. Mr. Perreton.

Prereq.: Architecture 28. Required of juniors in architecture. 6 lab.; 6 cr.

31, 32. Senior Architectural Design and Thesis. The design of the first semester includes a civic or residential development from which a residence and public building will be selected and designed, with special emphasis given to the expression of architectural character to harmonize with the immediate environment. The thesis in the second semester includes a practical course of building design to familiarize the student with the fundamental process of working drawing development in the architect's office. A residence or small public building will be designed to conform to the specified requirements of hypothetical clients. This is followed with working drawings and details, including structural and equipment drawings, to conform to the current architectural practice. Mr. Perreton and Mr. Huddleston.

Prereq.: Architecture 30. Required of seniors in architecture. 6 lab.; 6 cr.

33, 34. Advanced Architectural Design. An approved program proposed by the student will be used for advanced study in architectural design. Mr. Perreton.

Prereq.: Architecture 30. Elective by permission only. Credits to be arranged.

37. Freehand Drawing. Studio exercises in graphical representations designed to stimulate and develop the student's expression of creative thoughts. Original ideas will be guided through the process

of development by criticism and suggestions only, the student being given perfect freedom for self-expression. Mr. Thomas.

Elective by permission. 2 lab.; 2 cr.

38. Freehand Drawing. Elementary drawing in charcoal from casts and architectural ornament, aiming at the stimulation and development of creative thought through the study of fundamental forms. Mr. Thomas.

Elective by permission. Required of freshmen in architecture. 2 lab.; 2 cr.

39, 40. Freehand Drawing. Studio exercises from architectural details, cast ornament, and the cast figure in various media, with attention to accurate reproduction of proportions, the principles of freehand perspective, and the expression of mass by means of line and simple light and shade. Weather permitting, sketching from nature with special emphasis on tree and shrubbery forms. Mr. Thomas.

Prereq.: Architecture 38. Elective by permission. Required of sophomores in architecture. 2 lab.; 2 cr.

41, 42. Water Coloring and Modeling. Exercises in the handling of wash; studies in water color from documents, photographs, and still life; supplemented with lectures presenting the theory of color, both scientific and aesthetic. Outdoor sketching, if weather permits. Exercises in modeling clay of historic architectural ornament, followed by original designs from programs. Mr. Thomas.

Prereq.: Architecture 40. Elective by permission. Required of juniors in architecture. 1 lec.; 2 lab.; 3 cr.

44. Model Making. To create further appreciation of three-dimensional design, a complete model of the senior thesis problem will be constructed. The model will be executed in the scale and manner of the type often presented by the architect to the prospective client in assisting him to interpret the various plans and elevations. Instruction in the construction of the various types of architectural models. Mr. Thomas.

Prereq.: Architecture 42. Required of seniors in architecture. 2 lab.; 2 cr.

45, 46. Advanced Freehand Drawing. A general advanced study of special types, depending upon the student's previous training. The student will do a variety of work in the studio under individual supervision and criticism. Mr. Thomas.

Special permission must be obtained from the head of the department before registering in this course. Hours and credits to be arranged.

49, 50. Pottery. A study of the design and construction of pottery, including laboratory practice in molding, casting, throwing, glazing and

firing of household ware and architectural tiles and decorative ornament and figures. This course is given in cooperation with The League of New Hampshire Arts and Crafts.

Elective for architecture and liberal arts students. 1 rec., 2 lab.; 3 cr.

BOTANY AND BACTERIOLOGY

ORMOND R. BUTLER, *Professor;* MARIAN E. MILLS, *Assistant Professor;* STUART DUNN, *Assistant Professor;* LAWRENCE W. SLANETZ, *Instructor;* ALBION R. HODGDON, *Instructor;* JOSEPH NAGHSKI, *Graduate Assistant.*

BOTANY

1, 2. GENERAL BOTANY. A study of the seed-bearing plants with especial emphasis on the structure and functions of organs, followed by a general survey of the plant kingdom with especial emphasis upon development, reproduction and relationships. Evolution and heredity in plants. Miss Mills, Mr. Hodgdon.

Prereq.: 1 prerequisite for 2. Required of freshmen in agriculture. Elective for others. 2 lec.; 2 lab.; 4 cr.

3. PLANT HISTOLOGY. Characterization and differentiation of plant tissues; micro-technique. Mr. Dunn.

Prereq.: Botany 2. Required of juniors in botany and certain forestry students. 2 lab.; 2 cr.

4. PLANT PHYSIOLOGY. Structure and properties of the cell; absorption and movement of water; metabolism; growth and irritability. Mr. Dunn.

Prereq.: Botany 2 and one year of chemistry. Required of juniors in botany and forestry, and of seniors in horticulture. Elective for others. 2 lec.; 2 lab.; 4 cr.

5. PLANT PATHOLOGY. The bacterial and fungous diseases of plants, their symptoms, cause and prevention. Mr. Dunn.

Prereq.: Botany 2. Required of juniors or seniors in botany and horticulture. Elective for others. 1 lec.; 2 lab.; 3 cr.

52. SYSTEMATIC BOTANY. A study of the higher plants of our native flora. The student is required to collect an herbarium of 60 specimens. Miss Mills, Mr. Hodgdon.

Prereq.: Botany 1. Required of seniors in botany and certain juniors in forestry. Occasional lectures; laboratory work; field trips; 2 cr.

53, 54. ADVANCED BOTANY. The subject matter will depend upon the training and desire of the student. It cannot be elected without previous consultation. Mr. Butler, Miss Mills, Mr. Dunn.

Credits to be arranged.

Bacteriology

1. General Bacteriology. Morphology, physiology and classification of bacteria. The bacteriology of water, sewage, milk and foods. Relationships of bacteria to agriculture, home economics, and the arts and industries. Mr. Slanetz, Mr. Naghski.

Prereq.: One year of inorganic chemistry. Required of juniors in certain agricultural curricula. Elective for others. 2 lec.; 2 lab.; 4 cr.

2. Applied Bacteriology. A study of infection and immunity: important pathogenic bacteria; bacteriological and serological methods of disease diagnosis; bacteriological analysis of water, milk, meat, and canned products; antiseptics and disinfectants. Mr. Slanetz, Mr. Naghski.

Prereq.: Bacteriology 1. 2 lec.; 2 lab.; 4 cr.

55, 56. Advanced Bacteriology. The subject matter will depend upon the training and desire of the student. It cannot be elected without previous consultation. Mr. Slanetz.

Prereq.: Bacteriology 2 and agricultural chemistry 1, or chemistry 47 and 48. Credits to be arranged.

CHEMISTRY

Harold A. Iddles, *Professor;* Melvin M. Smith, *Associate Professor;* Heman C. Fogg, *Associate Professor;* James A. Funkhouser, *Assistant Professor;* Charles M. Mason, *Assistant Professor;* Albert F. Daggett, *Assistant Professor;* Kendrick S. French, *Instructor;* Wilbur H. Miller, *Instructor;* James W. Clapp, *Instructor;* Herbert B. Cowden, *Instructor;* Joseph W. Hickey, *Graduate Assistant;* Wendell H. Powers, *Graduate Assistant;* Edward F. Mellon, *Graduate Assistant;* Dwayne F. Vier, *Graduate Assistant;* Herbert E. Silcox, *Graduate Assistant.*

The departments of chemistry and agricultural chemistry occupy the new building, Charles James hall. Laboratories, equipment and recitation rooms, entirely modern in every respect, are provided for instruction in all fundamental courses. In addition ample facilities are available for advanced instruction and research work in inorganic, analytical, physical, and organic chemistry.

Breakage. A breakage deposit is required in certain laboratory courses, from which the actual breakage is deducted. The deposit receipt must be presented to the instructor at the first class meeting.

1, 2. General Chemistry. The course covers the fundamental laws and conceptions of chemistry, and includes a study of the non-metals and metals, together with their compounds. The theoretical principles

are illustrated and explained by many lecture demonstrations, and the applications of chemistry in the professions are explained. Mr. Iddles, Mr. Smith, Mr. French, Mr. Miller, Mr. Clapp, and assistants.

Elective for liberal arts students. Required of freshmen in the college of technology, freshmen in agriculture, and sophomores in home economics. Technology students will be sectioned on the basis of a placement examination taken during freshman week. 2 lec.; 1 rec.; 1 lab.; 4 cr.

4. Inorganic Chemistry. This course is a continuation of chemistry 1 and covers the fundamental laws and conceptions of chemistry involved in a study of the non-metals and metals, together with their compounds. Facts and practical applications are given and the principles are explained and illustrated by demonstrations in the lectures. The course is designed for major students in chemistry. Mr. Iddles, Mr. Smith, and assistants.

Required of freshmen majors in chemistry. 2 lec.; 1 rec.; 3 lab.; 6 cr.

11, 12. General Chemistry. Lectures and demonstrations on general chemistry, designed for those who desire to pursue a course in chemistry as an element of general culture rather than as a part of their professional training, and who desire to gain some knowledge of the spirit of a branch of science on which much of our present-day civilization is based. Textbooks: Findlay, The Spirit of Chemistry; Deming, The Realm of Carbon. Mr. Iddles.

Elective for junior and senior students only. 2 lec.; 2 cr.

21. Semi-micro Qualitative Analysis. The lectures consider the fundamental theories of solutions and the reactions involved in the qualitative scheme of analysis. The laboratory is conducted on a semi-micro scale, especial emphasis is placed upon the semi-micro technique and the use of drop reactions. Mr. Daggett.

Prereq.: Chemistry 2 or 4. This course required of sophomores in chemistry; not an elective course. 2 lec.; 2 lab.; 4 cr. Deposit: Five dollars for the semester.

22. Quantitative Analysis. The course covers the theory, problems and laboratory technique necessary in gravimetric analysis and acidimetry, and is designed for those who expect to continue with chemistry 31. Mr. Fogg.

Prereq.: Chemistry 21. Required of sophomores in chemistry; elective for others. 2 lec.; 2 lab.; 4 cr. Deposit: Five dollars for the semester.

25, 26. Introductory Quantitative and Qualitative Analysis. The first semester covers the theory, problems, and technique involved in some of the common procedures in both gravimetric and volumetric quantitative methods. The work of the second semester considers the

theory and problems of qualitative analysis. The laboratory work is conducted on a semi-micro scale and presents the special methods of technique involved. The work of these courses is designed to meet the needs of pre-medical students, and teachers in secondary schools. Mr. Fogg and Mr. Daggett.

Prereq.: Chemistry 2. Elective for pre-medical students; elective for others to the limit of laboratory space. 1 lec.; 2 lab.; 3 cr. Deposit: Ten dollars for the year.

31. Quantitative Analysis. This is a continuation of chemistry 22 and covers the theory, problems, methods involved in the determination of pH, precipitation reactions, oxidimetry and colorimetry. Mr. Fogg.

Prereq.: Chemistry 22. Required of juniors in chemistry; elective for others. 2 lec.; 3 lab.; 5 cr. Deposit: Five dollars for the semester.

32. Technical Quantitative Analysis. The course covers the technical methods employed in the analysis of alloys, gaseous liquid and solid fuels, gas mixtures, oils and lubricants. Sufficient experience is obtained to develop the skill and special technique necessary for these determinations. The lectures consider the theory of the methods, their interpretation and calculations. Mr. Fogg.

Prereq.: Chemistry 31. Required of juniors in chemistry; elective for others. 2 lec.; 3 lab.; 5 cr. Deposit: Five dollars for the semester.

47, 48. Organic Chemistry. The lectures deal with the principal classes of organic compounds, aliphatic and aromatic, with emphasis upon class reactions and structural theory. In the laboratory, the preparation and purification of a selected number of organic compounds is carried on. The latter part of the laboratory work involves the use of group reactions for the identification of organic substances in a systematic scheme of qualitative organic analysis. Mr. Iddles.

Prereq.: Chemistry 22. Required of juniors in chemistry; not an elective course. 3 lec.; 2 lab.; 5 cr. Deposit: Ten dollars for the year.

53, 54. Organic Chemistry. The lectures consider the chief divisions of organic chemistry, aliphatic and aromatic. These are considered with the needs of the pre-professional student in mind and are followed by a more detailed consideration of carbohydrates and proteins. The laboratory course is designed to develop the technique of organic chemical methods as illustrated in the preparation and purification of typical organic compounds. Mr. Funkhouser.

Prereq.: Chemistry 1, 2 and Chemistry 26 when possible. Elective for liberal arts students. Required of junior pre-medical students. 3 lec.; 2 lab.; 5 cr. Deposit: Ten dollars for the year.

55, 56. Theoretical Problems of Modern Organic Chemistry. A consideration of the principles underlying the behavior of organic compounds, and the problems awaiting solution. The first semester includes such topics as free radicals, the nature of organic linkages, unsaturated compounds including conjugated systems, polymerization and tautomerism. The first portion of the second semester is devoted to a discussion of cyclic compounds and the benzene problem; the major portion to stereochemistry, including steroisomerism, ring formation, and steric hindrance.

Prereq.: Chemistry 48 or 54. Elective for seniors in chemistry. 3 lec.; 3 cr.

61, 62. Introductory Theoretical Chemistry. The lectures of this course deal with the structure and properties of matter as developed from studies of radioactivity, atomic structure, crystal structure, etc. With these as a foundation the course develops the relations between elements as they occur in the periodic arrangement. Werner's theory of complex compounds is considered at the close of the year. An effort is made to develop the historical background of all these topics as they are discussed. Mr. Funkhouser.

Prereq.: Chemistry 22. Required of juniors in chemistry; elective for others. 2 lec.; 2 cr.

71, 72. Unit Processes. A study of the important inorganic and organic industrial chemical processes from the point of view of the basic chemical reaction involved and the plant equipment needed.

Prereq.: Chemistry 32 and 48. Required of seniors in chemistry. 2 lec.; 2 cr.

73, 74. Unit Operations. An elementary discussion of the theory of the unit operations of chemical industry and typical equipment for carrying out these operations. The topics discussed are flow of fluids, flow of heat, evaporation, diffusion, humidification, drying, distillation, gas absorption, extraction, crystallization, filtration, mixing, crushing and grinding, and size separation. Emphasis is laid on the quantitative relationship.

Prereq.: Chemistry 83, 84 taken concurrently. Required of seniors in chemistry. 2 lec.; 1 lab.; 3 cr. Deposit: Five dollars for the year.

81, 82. Elementary Physical Chemistry. The lectures of this course begin with a brief review and survey of the more important fundamental topics of physical chemistry. The remainder of the time is devoted to those topics of physical and theoretical chemistry which have application in the medical, biological, and agricultural sciences. Mr. Mason.

Prereq.: Chemistry 2, elementary physics 2, 6, or 8, mathematics 6 or equivalent. 2 lec.; 2 cr.

83, 84. PHYSICAL CHEMISTRY. This course will include a study of the properties of gases, liquids and solids. The principles of thermodynamics will be presented and their applications discussed. These will be used as a basis for the study of solutions, ionic theory, chemical equilibria, thermochemistry, conductance, and electromotive force. The principles of kinetics will be presented and their application to reaction rates discussed in detail. The laboratory will include accurate measurements illustrating the principles studied in the lectures. Mr. Mason.

Prereq.: Chemistry 32, mathematics 8, physics 8. Required of seniors in chemistry. 3 lec.; 2 lab.; 5 cr. Deposit: Ten dollars for the year.

87, 88. THESIS, BIBLIOGRAPHY AND SEMINAR. The thesis time is devoted to some selected subject, and the student is required to present a thesis covering the related background and experimental observations of his year's investigation. In one class meeting a week a discussion designed to aid the student in the use of the chemical library is presented. Actual problems are assigned requiring the use of various chemical journals, dictionaries, reference books and other sources of information on chemical subjects. Following this section of work the class period is devoted to individual student reports on recent topics of interest in chemistry. Members of the staff.

For seniors in chemistry who have completed chemistry 32 and 48. 1 lec.; 5 lab.; 6 cr. Deposit: Ten dollars for the year.

For courses primarily for graduate students, see catalog of the Graduate school.

CIVIL ENGINEERING

EDMOND W. BOWLER, *Professor;* RUSSELL R. SKELTON, *Associate Professor;* CHARLES O. DAWSON, *Instructor;* SALVATORE GRASSO, *Graduate Assistant.*

The department of civil engineering is in Conant hall. The offices and the drafting, recitation, and lecture rooms are on the first floor, and the instrument rooms and laboratories of materials testing and soils mechanics are in the basement. The hydraulic equipment, in the basement of DeMeritt hall, is used by the civil engineering department for instruction and experimentation. The department is well equipped with transits, levels, plane tables, and current meters for plane, topographic, geodetic and hydrographic surveying.

2. SURVEYING. The theory and use of surveying instruments and methods, including measurement of angles, direction and distance, differential leveling, trigonometric leveling, land surveying, note keeping, and calculations and plotting relating to traverses. The laboratory

periods during the first half of the semester are used for topographic drawing. Mr. Dawson and Mr. Grasso.

Prereq.: Mathematics 5 or Mathematics 2 carried in parallel. Required of freshmen in civil engineering. 1 rec.; 2 lab.; 3 cr. (Formerly a part of C.E. 1.)

3. SURVEYING. Further theory and use of surveying instruments and methods, including topographic surveying and mapping, stadia levels, adjustment of instruments, city surveying, and the solution of miscellaneous problems in topographic surveying. A topographic survey of a small area is completed in the field and the map plotted in the laboratory. Mr. Dawson.

Prereq.: Civil engineering 2. Required of sophomores in civil engineering. 1 rec.; 2 lab.; 3 cr. (Formerly a part of C.E. 1 and 2.)

4. SURVEYING. Theory and use of highway and railway curves. Engineering astronomy including observations on the sun and polaris for latitude, longitude, time and azimuth. Mr. Dawson.

Prereq.: Civil engineering 2. Required of sophomores in civil engineering. 1 rec.; 2 lab.; 3 cr. (Formerly a part of C.E. 2.)

6. SURVEYING. Theory and practice relating to preliminary location surveys, including highways, railways, bridges, pipe lines, and sewer lines. A field survey is made to demonstrate the fundamentals of location. Theory and practice of plane table surveys. Mr. Dawson.

Prereq.: Civil engineering 3 and 4. Required of sophomores in civil engineering. 1 rec.; 2 lab.; 3 cr. (Formerly a part of C.E. 2 and 4.)

7. SURVEYING. The theory and use of surveying instruments and methods on plane surveys, including measurement of angles, direction and distance, differential and profile leveling, calculations relating to traverses, and observations on the sun for direction. Mr. Dawson.

Prereq.: Mathematics 6 or 22. Required of sophomores in forestry. 2 lab.; 2 cr.

8. SURVEYING. The theory and use of surveying instruments and methods in topographic surveying and mapping, including a topographic survey of a small area in the field and the plotting of a topographic map of the same area in the drafting room, and observations on the polaris for direction. Mr. Dawson.

Prereq.: Civil engineering 7. Required of sophomores in forestry. 2 lab.; 2 cr.

9, (9). SURVEYING. Theory and use of the tape, transit and level in making plane surveys with computations and drafting exercises necessary to plot field notes. Mr. Bowler and Mr. Grasso.

Prereq.: Mathematics 2. Required of sophomores in electrical engineering during first semester and of sophomores in mechanical engineering during second semester. 2 lab.; 2 cr.

11. Location Mapping and Earthwork. A location strip map is plotted from the notes obtained in civil engineering 6, upon which a paper location is made. Theory and problems in earthwork computations. Mr. Dawson.

Prereq.: Civil engineering 6. Required of juniors in civil engineering. 2 lab.; 2 cr. (Formerly a part of C.E. 4, 5 and 6.)

15. Engineering Materials. A course arranged to acquaint the student with the methods of manufacture, physical properties and the application of the various materials used in engineering works, including timber, steel, stone, brick, cement, concrete and bituminous materials. The course also includes a selected series of ten laboratory experiments and reports on the testing of cements and concrete specimens. The recitation and preparation time is used for such laboratory periods. Mr. Skelton.

Prereq.: Geology 7 and mechanical engineering 9 either in parallel or as a prerequisite. 2 rec.; 2 cr. (Formerly a part of C.E. 16.)

22. Hydraulics. A study of the principles of hydrostatics and hydrokinetics, including the laws governing static pressures, the flow of water through orifices, tubes, nozzles, weirs, pipe lines and open channels, the dynamic action of jets and streams and fluid flow in pipes. This course includes laboratory exercises in hydraulic machinery and in stream gaging. Mr. Bowler.

Prereq.: Mechanical Engineering 9. Required of Juniors in Civil Engineering. 3 rec.; 1 lab.; 4 cr.

23. Hydraulics. Fundamental principles of hydrostatics and hydrokinetics. A study of fluid pressures, hydraulic gauges and meters, flow through pipes, tubes, orifices and nozzles, flow over weirs, flow in open channels, and the dynamic action of jets and streams. Mr. Dawson.

Prereq.: Mechanical Engineering 9, either in parallel or as a prerequisite. Required of Seniors in Electrical Engineering. 2 rec.; 2 cr.

24. Hydraulics. Fundamental principles of hydrostatics and hydrokinetics. A study of fluid pressure and fluid flow, hydraulic gauges and meters, fluid flow through pipes, tubes, orifices and nozzles, flow over weirs, flow in open channels, the dynamic action of jets and streams, and the theory of tangential and reaction turbines. Mr. Dawson.

Prereq.: Mechanical engineering 7. Required of juniors in mechanical engineering. 3 rec.; 3 cr.

27, 28. THEORY OF STRUCTURES. The graphical and analytical methods of determining reactions, moments and shears in beams, girders and trusses under fixed and moving loads and the stresses in various structures including simple, subdivided and multiple trusses, portals, viaducts, cantilevers and three-hinged arches. The computation of deflections and the application of the method of least work to statically indeterminate structures. Mr. Bowler and Mr. Grasso.

Prereq.: Mathematics 8, and mechanical engineering 9 and 10 as prerequisites or in parallel. Required of juniors in civil engineering. 3 rec.; 1 lab.; 4 cr.

31. HIGHWAY ENGINEERING AND TRANSPORTATION. A detailed study of the economics of location and design of highways and city streets, the methods of construction, maintenance and the specifications governing the various types of surfaces, and the administration and financing of our highway system. Special emphasis is given to the study of highway transportation. The subject is presented by means of lectures, recitations, field location, and the complete design of a section of highway. Mr. Skelton.

Prereq.: Civil engineering 6 and civil engineering 16. Required of seniors in civil engineering. 2 rec.; 2 lab.; 4 cr.

32. TRANSPORTATION ENGINEERING. A course embracing a study of the transportation forms, methods and facilities of land, water and air carriers, with emphasis on the various problems incidental to operation, engineering development, and the influence of transportation on our national growth. This course includes a brief study of railroad construction and maintenance from an engineering viewpoint, and is presented by lectures, recitations, problems and assigned reading. Mr. Skelton.

Prereq.: Civil engineering 31. Required of seniors in civil engineering. 2 rec.; 1 lab.; 3 cr.

33, 34. HYDRAULIC AND SANITARY ENGINEERING. A study of water power engineering, water supply and purification and sewerage and sewage treatment. This course covers precipitation, water losses, run-off, drainage areas, stream flow, water power estimates, hydraulic turbines, dams and water ways; the sources, quantity, quality and sanitary aspects of public water supplies; the methods of purification and distributing systems; the theory and problems of sewerage, the principles governing the disposal of sewage and the various methods of sewage treatment. This course consists of lectures, recitations, computations, reports and problems of design. Mr. Bowler.

Prereq.: Civil engineering 22. Required of seniors in civil engineering. 3 rec.; 1 lab.; 4 cr.

35. STRUCTURAL DESIGN. Theory and problems relating to the design of steel and timber structures. A steel girder and steel roof truss

are completely designed and working drawings prepared. Individual parts of steel bridge trusses and buildings are studied and designed. Emphasis is placed on economy of design, accuracy of results, clarity of vision and analytical thought. Mr. Skelton.

Prereq.: Civil engineering 28. Required of seniors in civil engineering. 2 rec.; 2 lab.; 4 cr.

36. Reinforced Concrete Structures. A course arranged to cover with equal emphasis the theory and design of reinforced concrete structures, such as beams, slabs, columns, footings, retaining walls and small bridges. The problems relating to construction are studied together with problems illustrating the theory. Mr. Skelton.

Prereq.: Civil engineering 35. Required of seniors in civil engineering. 2 rec.; 2 lab.; 4 cr.

38. Thesis. The student selects a subject of engineering, scientific or commercial interest for investigation or design. The results of his studies are presented as a thesis in which equal emphasis is placed upon composition and accuracy of subject-matter. The student confers with a member of the department each week for discussion of progress and for guidance in study. Departmental standards for form of presentation are strictly followed. Mr. Bowler, Mr. Skelton, Mr. Dawson.

Prereq.: English 41. Required of seniors in civil engineering. 1 conference each week; 2 cr.

41, 42, 43, 44. Student Chapter of the American Society of Civil Engineers. Junior and Senior students in Civil Engineering are required to join the student chapter of the American Society of Civil Engineers. In addition to the ordinary life of the student chapter which is carried on under the guidance of the student officers, the chapter meets once a week under the direction of an instructor. These meetings consist chiefly of the presentation of prepared addresses by the student members. Mr. Bowler, Mr. Skelton.

Required of juniors and seniors in civil engineering. No credit.

DAIRY HUSBANDRY

Kenneth S. Morrow, *Professor;* Herbert C. Moore, *Assistant Professor.*

2. Fundamentals of Dairying. A general survey of the dairy industry, with definite study of the composition and properties of milk and other dairy products, dairy manufacturing processes, and market milk; the selection and judging of dairy cattle. Mr. Morrow, Mr. Moore.

Recommended elective for freshmen or sophomores in agriculture not specializing in dairy husbandry. 2 lec.; 1 lab.; 3 cr.

3. Dairy Cattle. A study of pure-bred dairy cattle; breed history; pedigrees; family lines and methods of outstanding breeders; the application of the principles of genetics to the improvement of dairy cattle; herd analysis. Mr. Morrow.

Required of seniors in dairy husbandry. 2 lec.; 1 lab.; 3 cr.

4. Milk Production. A study of the feeding and management of dairy animals; calf feeding; raising young stock; feeding for economical milk production. Mr. Morrow.

Required of seniors in dairy husbandry. 2 lec.; 1 lab.; 3 cr.

5. Market Milk. A study of the producing, handling, and distributing of market and certified milk; dairy farm inspection; control of milk supply. Mr. Moore.

Required of seniors in dairy husbandry. 2 lec.; 1 lab.; 3 cr.

6. Ice Cream. A study of the making, handling, and marketing of ice cream and ices. Mr. Moore.

Required of seniors in dairy husbandry. 2 lec.; 1 lab.; 3 cr.

7. Butter and Cheese. (1) A study of the secretion and of the chemical and physical properties of milk; pasteurization; cream ripening; starters; churning; organization and operation of factories. (2) A study of the manufacturing and marketing of more important types of cheese. Mr. Moore.

Required of juniors in dairy husbandry. 1 lec.; 1 lab.; 2 cr.

9. Domestic Dairying. Nutritive value of milk, market milk, modified milk, certified milk, condensed milk, milk powder, fermented milk, butter, cheese, and ice cream. Laboratory exercises are given in the manufacture of dairy products. Mr. Moore.

Elective for juniors and seniors in home economics and liberal arts curricula. 2 lec.; 1 lab.; 3 cr.

10. Dairy Bacteriology. A study of the methods of bacteriological analysis of milk and its products; relation of bacteria to milk and its products; study of effect of bacteria in milk on separation, clarification, pasteurization, aeration, and straining; and the application of bacteriological principles to the dairy industry. Mr. Moore.

Prereq.: Bacteriology 1. Required of juniors in dairy husbandry. 2 lec.; 2 lab.; 4 cr.

12. Dairy Seminar. Studies of recent experiment station and other literature covering the field of dairying. Practice in looking up litera-

ture and in the preparation of oral and written reports will be given. Mr. Morrow.

Required of seniors in dairy husbandry. Elective for other students. 1 lec.; 2 cr.

13, 14. Dairy Cattle and Dairy Products Judging. (1) The comparative judging of dairy cattle. Animals in the college herd and in near-by herds will be judged. (2) The various standards and grades of dairy products will be studied. Practice will be given in judging milk, butter, cheese, and ice cream.

Cattle judging given first half of fall semester and last half of spring semester; products judging alternates with this schedule. Students interested in competing for places on college judging teams should elect this course. Mr. Morrow, Mr. Moore.

Prereq.: 13 prerequisite for 14. Required of juniors in dairy husbandry. 1 lab.; 1 cr.

16. Advanced Dairy Science. Basic data, fundamental observations, and discussions of research contributing to the present status of the dairy industry. Mr. Moore.

Required of seniors in dairy husbandry. Elective for other students who have adequate preparation in chemistry and bacteriology. 2 lec.; 2 cr.

ECONOMICS AND ACCOUNTING

Harry W. Smith, *Professor;* Arthur W. Johnson, *Associate Professor;* Norman Alexander, *Associate Professor;* John D. Hauslein, *Assistant Professor;* Ruth J. Woodruff, *Assistant Professor;* Clair W. Swonger, *Assistant Professor;* Carroll M. Degler, *Assistant Professor;* Ruth C. Adams, *Instructor.*

Economics

Students majoring in economics are expected to take Economics 1 and 2. History, philosophy and American government will be approved as related work for a major in economics.

1, 2. Principles of Economics. The fundamental principles which explain the organization and operation of the economic system. Mr. Degler, Mr. Swonger and Miss Woodruff.

Prereq.: 1 prerequisite for 2. Required of general business students. Elective for other sophomores, juniors and seniors. 3 lec. or rec.; 3 cr.

3. Economic and Commercial Geography. The economic aspects of geography. The sources and methods of production of the world's

staple commodities. The influence of physical environment on economic, commercial, and financial development of Europe. Mr. Swonger.

Required of general business students. Elective for sophomores. 3 lec. or rec.; 3 cr.

4. Economic and Commercial Development of the United States. The economic, commercial, and financial development of the United States. Mr. Smith, Mr. Degler, and Miss Woodruff.

Required of general business students. Elective for sophomores. 3 lec. or rec.; 3 cr.

5. Economic and Commercial Development of Europe. The economic, commercial, and financial development of Europe. Mr. Degler.

Elective for sophomores. 3 lec. or rec.; 3 cr. (Not given in 1938–39)

51. Labor Problems. This course deals with the historical background and present status of labor organizations and problems. Mr. Smith.

Prereq.: Economics 2. Required of general business students. 3 lec. or rec.; 3 cr.

52. Public Finance. This course presents the theory and practice of public expenditures and collection of public revenues. It emphasizes changed tendencies and policies in taxation reform. Particular attention will be given to taxation problems in the state of New Hampshire. Mr. Smith.

Prereq.: A satisfactory average in 12 semester credits in economics. 3 lec. or rec.; 3 cr.

11. Transportation. This course gives an account of the development and organization of transportation agencies. Mr. Smith.

Prereq.: Economics 2. 3 lec. or rec.; 3 cr.

12. International Trade. The basic theories of international trade, foreign exchange and international payments.

Prereq.: Economics 2. 3 lec. or rec.; 3 cr. (Not given in 1938–39)

53, 54. Money and Banking. The theory and practice of money and banking. Mr. Swonger.

Prereq.: Economics 2. 13 prerequisite for 14. Required of general business students. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

55. Corporations. The development and forms of business organization and combination. Mr. Degler.

Prereq.: Economics 2. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

56. Corporation Finance. The methods of financing corporate enterprise. Mr. Swonger.

Prereq.: Economics 15. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

21, 22. Commercial Law. The law of contracts, agency, sales, and negotiable instruments. Mr. Alexander.

Required of general business students. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

23. Public Regulation of Business. A study of the federal control of business organizations and their activities with special reference to anti-trust legislation. Mr. Alexander.

Prereq.: Economics 2. Required of general business students. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

24. Marketing. The economics of the marketing functions, agencies, and special problems of marketing. Mr. Degler.

Prereq.: Economics 2. Required of general business students. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

57, 58. History of Economics. It is the aim of this course to present a critical account of the development of economic thought in the leading nations of the western world; to study the economic systems of Greece, Rome, medieval and modern Europe, including the manorial, guild, mercantile, kameralistic, physiocratic, laissez faire, classical, historical and socialistic systems; and to indicate the important relations of economic philosophy to historical, political and social environment. Mr. Smith.

Prereq.: Senior standing and a satisfactory average in 12 semester credits in economics. 3 lec. or rec.; 3 cr.

59, 60. Seminar in Current Economic Problems. Mr. Smith.

Elective for seniors majoring in economics who have attained a satisfactory average in the department. Recitations and reports; 3 cr.

Service Courses

Economics 45, 46; 47, 48 are service courses for the college of technology.

45. Business Organization and Finance. Mr. Swonger.

For juniors in the college of technology only. 2 lec. or rec.; 2 cr.

46. Public Regulation of Industry. Mr. Alexander.

For juniors in the college of technology only. 2 lec. or rec.; 2 cr.

47, 48. Economic History of the Working Classes. Mr. Smith.

For juniors in the college of technology only. 1 lec. or rec.; 1 cr.

Accounting

Note.—Students who have completed two or more years of bookkeeping in preparatory school will be permitted to register for Intermediate Accounting (3, 4) upon passing an examination covering the material of Elementary Accounting (1, 2).
Schedule the following courses as Acct. 1, etc.

1, 2. Elementary Accounting. A thorough study of the basic principles and theory of accounting. Extensive practice in accounting problems of the single proprietorship and partnership types of business organization. Mr. Hauslein.

Prereq.: 1 prerequisite for 2. Required of general business sophomores. Elective for other sophomores, juniors and seniors. 2 lec. or rec.; 2 lab.; 4 cr.

3, 4. Intermediate Accounting. This course is designed to follow 2, continuing with the work in partnerships, followed by a comprehensive study of corporation accounting. Extensive practice work in handling problems of corporation accounting. Mr. Johnson and Mr. Hauslein.

Prereq.: 3 prerequisite for 4. Required of general business juniors. Elective for students who have completed Accounting 2 or its equivalent. See note above. 2 lec. or rec.; 2 lab.; 4 cr.

5, 6. Advanced Accounting. Advanced theory of accounting and extensive practice in solving problems involving such theory. Study of federal income tax law and the accounting procedure in connection therewith. Practice in computing income tax returns. Mr. Johnson.

Prereq.: 5 prerequisite for 6. Elective for students who have completed Accounting 4 or its equivalent. 2 lec. or rec.; 2 lab.; 4 cr.

7, 8. Cost Accounting. The relation of cost accounting to general accounting. The place of cost accounting in modern business. Study of types of cost systems and their application to particular lines of business. Careful analysis of methods of computing costs. Effect of recent federal legislation on cost accounting. Mr. Johnson.

Prereq.: 7 prerequisite for 8. Elective for students who have completed Accounting 4 or its equivalent. 2 lec. or rec.; 2 lab.; 4 cr.

9, 10. Hotel Accounting. Theory and practice of keeping accounting and financial records for hotels. Mr. Johnson.

Required of students in hotel administration. Prereq.: 1, 2. 2 lec.; 1 lab.; 3 cr.

SECRETARIAL STUDIES

Schedule the following courses as Shorthand 1, etc., and Typewriting 7, etc.

1, 2. SHORTHAND. A thorough study of the fundamental principles of Gregg shorthand. Miss Adams.

Prereq.: 1 prerequisite for 2. Required of secretarial students. 5 lec. or rec.; 3 cr.

3, 4. SHORTHAND AND OFFICE PRACTICE. This is an advanced course in shorthand. The second semester will combine the work of the second semester of advanced typewriting with laboratory projects in which shorthand, typing, filing, mailing, mimeographing, and other modern office projects that will furnish valuable secretarial experience will be directed and supervised. Miss Adams.

Prereq.: Shorthand 2, or the equivalent. 3 prerequisite for 4. Required of secretarial students. 5 lec., rec., or lab.; 3 cr.

7, 8. TYPEWRITING. This course includes keyboard drill, practice in tabulating, setting up letters and business forms. Miss Adams.

Prereq.: 7 prerequisite for 8. Required of secretarial students. 5 lab.; 2 cr.

9, 10. TYPEWRITING. Transcription of shorthand notes. Typing of legal and technical forms, etc. To be taken only in conjunction with Shorthand 3, 4. For second semester, see description of Shorthand 4. Miss Adams.

Prereq.: 9 prerequisite for 10. Required of secretarial students. 5 lab.; 2 cr.

EDUCATION

A. MONROE STOWE, *Professor;* HARLAN M. BISBEE, *Associate Professor;* GLADYS MACPHEE, INSTRUCTOR.

HELEN F. MCLAUGHLIN, *Professor* (*Home Economics-Education*); WALTER E. WILBUR, *Associate Professor* (*Mathematics-Education*); CARL LUNDHOLM, *Assistant Professor* (*Physical Education*); MARGARET R. HOBAN, *Assistant Professor* (*Physical Education*); JOHN A. FLOYD, *Instructor* (*French-Education*); * EARL H. LITTLE, *Instructor* (*Agriculture-Education*); ROBERT H. GRANT, *Instructor* (*English-Education*).

41, 42. PSYCHOLOGICAL PRINCIPLES OF SECONDARY EDUCATION. The

* Representing the state department of education in the administration of the Smith-Hughes Act.

purpose of this course in educational psychology is to help students acquire an appreciative understanding of important principles of human behavior, of the educational needs of adolescents, and of the most effective ways of meeting those needs. Mr. Stowe.

Prereq.: 41 prerequisite for 42. Open to sophomores. Required of students completing the University Teacher-Preparation curriculum. 3 rec.; 3 cr.

45, (45). New Hampshire State Program of Studies and School Law. A study of the aims and purposes, the plan of organization and administration of the secondary school as outlined in the New Hampshire state program of studies and school law. Mr. Bisbee.

Open to juniors and seniors. Preparatory for the state examinations in secondary program and in school law. 2 rec.; 2 cr.

51, 52. Social Principles of Secondary Education. This course in educational sociology and secondary education is devoted to a consideration of the educationally significant aspects and needs of our modern democratic society and to a study of the organization, functions, curricula and outstanding problems of our American institutions of secondary education. Mr. Stowe.

Prereq.: Education 41, 42. 51 prerequisite for 52. Required of students completing the University Teacher-Preparation curriculum. 3 rec.; 3 cr.

61, (61). Principles and Problems of Teaching in the Secondary School. This course is devoted to a study of the following aspects of teaching in secondary schools: (1) secondary school objectives and the objectives in the teaching of secondary school subjects; (2) principles of teaching and of directing learning incorporated in teaching which meets the needs of high school students and attains the objectives of the secondary school; (3) secondary school tests and the ways in which teachers are endeavoring to ascertain the extent to which their objectives are being attained; (4) class management, the purpose of which is to insure conditions favorable to the attainment of the objectives of the secondary school. Mr. Bisbee.

Prereq.: Education 41, 42. Required of students completing the University Teacher-Preparation curriculum. 3 rec.; 3 cr.

71, 72. History of Education. Students who are interested are advised to elect History 53, 54. (Not given in 1938–39)

75. Democracy in Education and Character Development. This course will discuss student participation in high school control; social functions; the underlying principles of club work; the problem of character education and a discussion of the moral standards in our high schools as revealed by investigations. Mr. Bisbee.

Prereq.: Education 41, 42. 3 rec.; 3 cr.

76. Philosophy of Education. A consideration of the fundamental concepts and ultimate objectives of education, current educational doctrines and controversies, changes in educational procedures, historic background and philosophical implications. Mr. Bisbee.

Prereq.: Education 51, 52. 3 rec.; 3 cr.

COURSES IN PROBLEMS IN THE TEACHING OF HIGH SCHOOL SUBJECTS

*The following courses in professionalized subject-matter are devoted to a study of problems of objectives, selection and organization of subject-matter, teaching and testing techniques and classroom management in the teaching of the respective subjects. A student desiring to do supervised teaching must complete with a grade of at least 75 one of these courses in the subject in which he hopes to do supervised teaching.

Agriculture-Education (ag-ed) 92. Problems in the Teaching of High School Agriculture. Mr. Little.

Required of seniors taking the Agricultural Teacher-Preparation curriculum, and open only to those students. The equivalent of 2 class meetings; 2 cr.

English-Education (eng-ed) 91. Problems in the Teaching of High School English. Mr. Grant.

3 rec.; 3 cr.

French-Education (fr-ed) 91. Problems in the Teaching of High School French. Mr. Floyd.

3 rec.; 3 cr.

Home Economics-Education (he-ed) 91. Problems in the Teaching of High School Home Economics. Mrs. McLaughlin.

Required of seniors in Home Economics Teacher Preparation and Extension curricula. 3 rec.; 3 cr.

Mathematics-Education (math-ed) 91. Problems in the Teaching of High School Mathematics. Mr. Wilbur.

3 rec.; 3 cr.

Physical Education (p-e) 91, 92. Problems in the Teaching of Physical Education for Women. Miss Hoban.

3 rec.; 2 lab.; 4 cr.

†Biology-Education (bi-ed) 91. Problems in the Teaching of High School Biology.

Open to seniors and graduate students who have satisfactorily completed one year of college biology and

* For details concerning prerequisites and nature of these courses, see descriptions given under respective subject-matter departments.
† Not offered in 1938–1939.

Education 61, or 141–a, 142–b, or 40–c. Required of students who desire to do supervised teaching in biology. 3 rec.; 3 cr.

*Chemistry-Education (ch-ed) 91. Problems in the Teaching of High School Chemistry.

Open to seniors and graduate students who have had two years of college chemistry and have satisfactorily completed Education 61, 141–a, 142–b, or 40–c. Required of students who desire to do supervised teaching in chemistry. 3 rec.; 3 cr.

Physical Education 38. Winter Sports. (2 cr.)

Physical Education 45. Coaching Football (2 cr.)

Physical Education 46. Coaching Baseball. (2 cr.)

Physical Education 47. Track and Field Athletics (2 cr.)

Physical Education 49. Coaching Basketball. (2 cr.)

Physical Education 61. Teaching of Recreational Activities. (3 cr.)

Physical Education 62. Camp Administration (3 cr.)

Physical Education 64. Community Recreation. (3 cr.)

Physical Education 65. Organization and Administration of Health and Physical Education in Secondary Schools. (3 cr.)

*Physics-Education (ph-ed) 91. Problems in the Teaching of High School Physics.

Open to seniors and graduate students who have satisfactorily completed one year of college physics and Education 61, or 141–a, 142–b, or 40–c. Required of students who desire to do supervised teaching in physics. 3 rec.; 3 cr.

History-Education (hist-ed) 91. Problems in the Teaching of High School History.

Open to seniors and graduate students who have satisfactorily completed the following courses: History 7, 8; Political Science 1, 2; either Economics 1, 2 or 4; and Education 61. Required of all students who desire to do supervised teaching in history. 3 rec.; 3 cr.

COURSES IN SUPERVISED TEACHING

This work is required in the teacher preparation curriculum. It is open only to students whose applications are approved by the head of the department of education and the supervisor of student teaching in the subject or subjects in which the applicant desires to do super-

*Not offered in 1938–39.

vised teaching. Applications should be filed in the office of the department of education in October of the academic year in which the supervised teaching is to be done. No applications will be considered unless the applicant has completed with a grade of at least 75 the following courses in Education: 41, 42 (or 121–a, 122–b, and 123–c), 51, 52 (or 131–a, 132–b, and 133–c), and 61, (or 141–a, 142–b) and, with an average grade of 75 or better, at least 18 semester credits in the subject-matter field in which he desires to teach under supervision. The applicant must also complete with a grade of at least 75 a course in the problems of teaching the subject in which he desires to do supervised teaching.

Students may be enrolled for from 6 to 10 credits of work in supervised teaching in the second semester of the academic year.

EDUCATION-AGRICULTURE (ED-AG) 93. SUPERVISED TEACHING IN HIGH SCHOOL AGRICULTURE. Each senior in the agricultural teacher preparation curriculum will spend at least ten weeks as an apprentice teacher in some agricultural high school selected by the state commissioner of education and the professor of education at the University of New Hampshire. This work will be in charge of the regular teacher of agriculture in the high school, and will be supervised by the instructor in agricultural education at the University of New Hampshire. Mr. Little.

Required of seniors taking the Agricultural Teacher-Preparation curriculum, and open only to those students.

EDUCATION-BIOLOGY (ED-BI) 94. SUPERVISED TEACHING IN HIGH SCHOOL BIOLOGY. Prereq.: Bi-Ed 91.

EDUCATION-BOTANY (ED-BOT) 93. SUPERVISED TEACHING IN HIGH SCHOOL BOTANY.

EDUCATION-CHEMISTRY (ED-CHEM) 94. SUPERVISED TEACHING IN HIGH SCHOOL CHEMISTRY. Prereq.: Ch-Ed 91.

EDUCATION-CIVICS (ED-CIV) 94. SUPERVISED TEACHING IN HIGH SCHOOL CIVICS. Prereq.: Hist-Ed 91.

EDUCATION-COMMERCE (ED-CS) 94. SUPERVISED TEACHING IN HIGH SCHOOL COMMERCIAL SUBJECTS.

EDUCATION-ECONOMICS (ED-ECON) 94. SUPERVISED TEACHING IN HIGH SCHOOL ECONOMICS. Prereq.: Hist-Ed 91.

EDUCATION-ENGLISH (ED-ENG) 94. SUPERVISED TEACHING IN HIGH SCHOOL ENGLISH. Prereq.: Eng-Ed 91.

EDUCATION-FRENCH (ED-FR) 94. SUPERVISED TEACHING IN HIGH SCHOOL FRENCH. Prereq.: Fr-Ed 91.

EDUCATION-HISTORY (ED-HIST) 94. SUPERVISED TEACHING IN HIGH SCHOOL HISTORY. Prereq.: Hist-Ed 91.

HOME ECONOMICS-EDUCATION (HE-ED) 94. SUPERVISED TEACHING IN HIGH SCHOOL HOME ECONOMICS. Mrs. McLaughlin.

Required of seniors in Home Economics Teacher Preparation curriculum. Prereq.: He-Ed 91.

EDUCATION-INDUSTRIAL ARTS (ED-IA) 94. SUPERVISED TEACHING IN HIGH SCHOOL INDUSTRIAL ARTS.

EDUCATION-LATIN (ED-LAT) 94. SUPERVISED TEACHING IN HIGH SCHOOL LATIN.

EDUCATION-MATHEMATICS (ED-MATH) 94. SUPERVISED TEACHING IN HIGH SCHOOL MATHEMATICS. Prereq.: Math-Ed 91.

EDUCATION-PHYSICAL EDUCATION (ED-PE) 93, (93). DIRECTED TEACHING IN PHYSICAL EDUCATION ON CAMPUS. (2 to 4 cr.)

EDUCATION-PHYSICAL EDUCATION (ED-PE) 94. SUPERVISED TEACHING OF PHYSICAL EDUCATION IN THE FIELD. (2 cr.)

EDUCATION-PHYSICS (ED-PH) 94. SUPERVISED TEACHING IN HIGH SCHOOL PHYSICS. Prereq.: Ph-Ed 91.

EDUCATION-SOCIOLOGY (ED-SOC) 94. SUPERVISED TEACHING IN HIGH SCHOOL SOCIOLOGY. Prereq.: Hist-Ed 91.

ZOÖLOGY-EDUCATION (ZOÖL-ED) 93, 94. SUPERVISED TEACHING IN HIGH SCHOOL ZOÖLOGY. Prereq.: Ed-Bi 91.

COURSES PRIMARILY FOR TEACHERS IN SERVICE

The following courses are primarily for teachers in service. Those who are interested should consult with the department of education as to the time they are scheduled.

84. SECONDARY EDUCATION IN THE JUNIOR HIGH SCHOOL. The course is designed to trace the evolution of the junior high school and to contrast it with earlier forms of school organization. Among the topics discussed are the particular features and functions of the school; the educational objectives and philosophy underlying its program; the attempt to humanize adolescent education; the school's function in a democracy; the junior high school as a community centre; articulation between the junior high school and the elementary and senior high schools. Considerable attention is given to the program of studies and the content of various courses of study in both small and large communities with the purpose of adapting this school unit to the problems of the present. Consideration will be given in this course to extra-classroom activities and their articulation with classroom procedures. Lectures, assigned readings, problems and discussions.

Open to teachers in service and to juniors, seniors, and graduate students. One 2-hour rec.; 2 cr.

GEOLOGY 71. HUMAN GEOGRAPHY. The surface of the earth as the home of man is studied. The physical geographic characteristics of

plain, plateau, and mountain regions are related to the use man has made of these divisions of the continents and the varying effect they have on human activities because of latitude, altitude, weather, structure, and other geographic factors. Examples of the inter-action of man with various geographic environments are taken from various parts of the world. Among plains regions studied are the central plain of North America, the great Russian plain, and the Amazonian lowlands; as examples of plateaus, the Transcaucasia plateaus, the Appalachian plateau, and the Tibetan plateau; and as examples of mountains and their effect on their inhabitants, the Rockies, the Alps, and the Himalayas. Wall maps, topographic and geologic maps, atlases, lantern slides, and a well selected library will be available to the student for reference purposes.

Open to teachers of geography and to commercial and social studies teachers who have occasion to stress the influence of geographical factors upon social phenomena. One 2-hour rec.; 2 cr.

GEOLOGY 72. GEOGRAPHY OF NORTH AMERICA. A study of the regional geography of North America. The physiography of the continent and its natural divisions are considered in relation to climate, structure, and political divisions. Most of the time is given to the study of the United States, but Canada and Mexico are also studied. The geography of New England is taken up in considerable detail. Maps, references, and lantern slides will be used to supplement the class discussion.

Open to teachers of geography and to commercial and social studies teachers who have occasion to stress the influence of geographical factors upon social phenomena. One 2-hour rec.; 2 cr.

HISTORY-EDUCATION (HIST-ED) 91. PROBLEMS IN THE TEACHING OF HIGH SCHOOL HISTORY. This course includes a study of the purposes and objectives of teaching high school history, of the selection and organization of teaching material, and of teaching and testing techniques which may be advantageously used in teaching high school history. The course will include experiments in studying and teaching recent American history.

One 2-hour rec.; 2 cr.

HISTORY-EDUCATION (HIST-ED) 92. PRACTICUM IN THE TEACHING OF HISTORY IN HIGH SCHOOLS. The purpose is to aid teachers of world history, ancient, early European, and modern history. The difficulties and values of such courses will be appraised. How can subject matter be selected and organized, considering the pupil's age and attainment level, to clarify factors and forces and processes of mankind in the past that make the present world more understandable? Consideration will be given to objectives, curriculum variations, methods of presentation, reading and activity programs, testing, the teaching of current events, and such other problems as are raised by members of the class. The vision, the challenge, and the ideals of social studies instruction will be

balanced by the reality of developing teachable units for classroom use. Individual guidance will be given members of the class as they work on their own special problems.

One 2-hour rec.; 2 cr.

Political Science 59. The Government of the State of New Hampshire. Since the General Court passed its recent legislation requiring the instruction of children in elementary and secondary schools in the subject of the constitution of the state of New Hampshire, many teachers and students have found greater need for information about their state government. This course is designed to meet that desire. The constitutions of the state and incidentally of the federal government will be used as the bases for instruction. The object will be to give the student electing the course a rounded out picture of the state government and the problems which confront it. The subject matter can be divided into the organization, functions, and problems of the government of New Hampshire.

One 2-hour rec.; 2 cr.

Political Science 60. The Contemporary American Political Scene. This course is specifically designed for teachers of civics and for those who wish to keep abreast of current political developments in the United States. The adoption of new and the abandonment of old governmental machinery, programs and policies make a review of our government and its manifold problems desirable. The decisions of the federal supreme court, legislation since 1932, the growing demand for better personnel in government, contemplated government reforms, trade agreements, the new position of labor, and other similar topics will be discussed. Students electing this course will be required to subscribe to a large metropolitan newspaper.

One 2-hour rec.; 2 cr.

Social Studies-Education (ss-ed) 91. Problems in the Teaching of High School Social Studies. This course includes a study of the purposes and objectives of teaching high school social studies, of the selection and organization of teaching material, and of teaching and testing techniques which may be advantageously used in teaching high school social studies.

One 2-hour rec.; 2 cr.

Social Studies-Education (ss-ed) 92. Practicum in the Teaching of Social Studies other than History. This is especially designed not only for those social studies teachers who are interested in the fields of economics, sociology, and government, but also for administrators and supervisors. It will include a study of curriculum problems in senior and junior high schools, and the major trends and developments in the social studies field. In this connection will be considered major reports such as those of the commission on the social studies of the Ameri-

can Historical association, the 1936 yearbook of the department of superintendence, and the recent report on history of the college entrance examination board. Books and periodicals of value to social studies teachers will be noted. In the subject-matter fields under special consideration actual units will be developed, and general plans for the courses discussed. The approach will be that of the pupils' experience and interest. A background study will be made of objectives, teaching technics, activity and reading programs, and testing. Use of periodicals, newspapers, and pamphlets for the study of public affairs is an essential element of this course. The teaching of controversial topics will be given careful consideration. The social studies workroom enables the members of the class to get acquainted with a wide range of textbooks and other materials. Members of the class will be encouraged to work on their individual problems and to develop their own courses with guidance and advice.

One 2-hour rec.; 2 cr.

ELECTRICAL ENGINEERING

LEON W. HITCHCOCK, *Professor;* FREDERICK D. JACKSON, *Assistant Professor;* WILLIAM B. NULSEN, *Assistant Professor,* ROBERT MACE, *Assistant*

The department of electrical engineering is located in DeMeritt hall. The main laboratory is used for testing electrical machinery and experiments involving the generation and distribution of power. It contains a large distribution switchboard on which are mounted instruments, switches, circuit breakers and plugging devices which provide a means of supplying either direct or alternating current to the various panels in the laboratory and to the lecture rooms in the building. The power supply is furnished by two motor-generator sets. The general equipment consists of direct and alternating current generators and motors, transformers, rectifiers, synchronous converters, regulators, etc.

A second laboratory is devoted to experiments involving communication and electronic devices. This laboratory has available for its power supply not only the facilities of the main laboratory, but in addition its own motor-generator sets and storage batteries. The general equipment consists of an artificial open wire telephone line, an artificial telephone cable line, telephone repeaters, a magneto and a common battery exchange switchboard, oscillators, amplifiers, public address systems, a broadcasting control panel, equipment for recording radio programs, and oscillographs, meters, bridges, etc., for measuring the characteristics of telephone and radio circuits, and the electrical characteristics of speech, music, etc.

The lecture room of the department is connected directly with both laboratories so that class demonstrations can be provided readily. A small motor-generator set with the necessary meters is so mounted in this room that the characteristics of generators and motors as well

as of other types of electrical equipment can be presented before the class.

1, 2. Electrical Engineering. An elementary study of electrical circuits and machinery. Mr. Hitchcock.

Required of sophomores in electrical engineering. 1 rec.; 1 lab.; 2 cr.

3, 4. Electrical Engineering. A continuation of Electrical Engineering 2. Electric and magnetic circuits, direct current generators and motors, armature windings, batteries, alternating current circuits, alternators and transformers. Mr. Nulsen and Mr. Jackson.

Prereq.: Physics 8, mathematics 8 and electrical engineering 2. Required of juniors in electrical engineering. 3 rec.; 3 cr.

5. Electrical Engineering. A continuation of Electrical Engineering 4. Induction motors, regulators, synchronous motors, converters and rectifiers; transmission line regulation, efficiency, insulation, lightning protection, sag and tension, etc. Mr. Hitchcock.

Prereq.: Electrical engineering 4. Required of seniors in electrical engineering. 3 rec.; 3 cr.

7. Electronics and Communication. The principles of electronic apparatus; including vacuum tubes, vacuum tube amplifiers, gaseous triodes, photo-electric cells; and their application in electrical communication and in industry. Mr. Jackson.

Prereq.: Electrical engineering 4, 33, 36 or 38. Required of seniors in electrical engineering. 2 rec.; 1 lab.; 3 cr.

8. Telephone Communication. The principles of basic telephone apparatus and circuits. A detailed study of telephone transmission including inductive interference, equivalent networks, the infinite transmission line, the determination of line and cable characteristics, repeaters, filters, measurement of transmission characteristics, and the study of routine repeater tests. Mr. Jackson.

Prereq.: Electrical engineering 7. Elective for seniors in electrical engineering. 3 rec.; 1 lab.; 5 cr.

10. Advanced Circuit Theory. Application of mathematics to the solution of electrical circuit problems, including the use of differential equations, Heaviside's operators, and symmetrical phase components; derivation of fundamental formulas and constants. Mr. Nulsen.

Prereq.: Electrical engineering 5. Elective for selected seniors in electrical engineering. 3 rec.: 1 lab.; 4 cr.

12. Illumination. Principles of illumination and photometry, light sources, residential and commercial lighting, street lighting, display

and advertising lighting; wiring methods and calculations: National Electrical Code rules. Mr. Nulsen.

Required of seniors in electrical engineering. Elective for students who have completed electrical engineering 33, 36 or 38. 2 rec.; 2 cr.

13, 14. Electrical Problems. The solution of problems involving magnetic circuits, direct and alternating current circuits and machinery, and complex notation. Mr. Hitchcock and Mr. Nulsen.

Required of juniors in electrical engineering. 2 rec.; 2 cr.

15, 16, 17, 18. Student Branch of the American Institute of Electrical Engineers. A student organization conducted in accordance with the by-laws of the Institute with meetings given a place on the student's class schedule. Each student is required to present and discuss an approved subject. At times the meeting may take the form of a debate, an address by an outside lecturer or a motion picture of an instructive nature. Students in this course must become student members of the A.I.E.E. and must subscribe to a magazine selected by the department.

Required of juniors and seniors in electrical engineering. 1 rec.; no cr.

19, 20. Thesis. An original investigation offering opportunity for a better understanding of the fundamental principles and theory underlying electrical engineering practice and the design and operation of electrical equipment. Apparatus constructed as a part of a thesis becomes the property of the department. A statement of progress must be submitted at the conclusion of each scheduled period. A thesis may be discontinued at any time if there appears to be a lack of interest or ability, or for failure on the part of the student to report at the periods scheduled. Members of the staff.

Elective for seniors in electrical engineering. 3–5 lab.; 3–5 cr.

23, 24. Laboratory. Operation and test of direct and alternating current equipment; study of laboratory practice and report presentation. Mr. Nulsen.

Prereq.: Electrical engineering 2. Required of juniors in electrical engineering. 1 lab.; 2 cr.

25. Laboratory. A continuation of Electrical Engineering 24. Mr. Nulsen.

Prereq.: Electrical engineering 24. Required of seniors in electrical engineering. 2 lab.; 4 cr.

26. Laboratory. Advanced laboratory testing and special problems. The student works on problems of his own selection which have

been definitely outlined by him and have received approval. This may take the form of a semester thesis, or it may consist of a series of original experiments in which the student is especially interested. Mr. Nulsen.

Prereq.: Electrical engineering 25. Elective for selected seniors in electrical engineering. 4 lab.; 4 cr.

28. Advanced Electronics Laboratory. Special radio problems, electron tube applications of a research nature, or studies and applications of audio frequency amplifier systems. Mr. Jackson.

Prereq.: Electrical engineering 7. Elective for technology seniors with permission of the department. Lab. and conferences; 4 cr.

32. Electric Circuits. Adapted primarily to students in architecture. Each member of the class is supplied with a set of architect's plans of a residence. The semester project is to add to these plans the wiring and the location of fixtures, service outlets and switches to provide for the proper illumination and appliances as are needed to fulfill modern requirements of human needs and safety codes. The final set of plans together with a set of specifications covering the wiring contract for the building are submitted to the instructor at a time specified. The class discussion during the semester involves such items as the service entrance, meter location, entrance switches, protection of circuits and appliances, types of wiring, factors affecting the size of wire, types and locations of fixtures, etc. Mr. Jackson.

Required of students in architecture. 2 rec.; 2 cr.

33. Fundamentals of Electricity. Fundamentals of electric and magnetic circuits, storage batteries, direct and alternating current equipment, electronics. Mr. Nulsen.

Required of juniors in chemistry. 3 rec.; 1 lab.; 4 cr.

36. Construction Equipment. Direct and alternating current circuits, wiring for light and power, generation of electric power, motors, transformers, controlling devices. Mr. Hitchcock.

Required of juniors in civil engineering. 3 rec.; 1 lab.; 4 cr.

37, 38. Electrical Machinery. Direct and alternating current circuits, theory and characteristics of electric motors and generators, starting and control equipment. Mr. Jackson.

Required of juniors in mechanical engineering. 3 rec.; 1 lab.; 4 cr.

42. Principles and Applications of Electron Tubes. A study of vacuum tubes, vacuum tube amplifiers, gaseous triodes, photo-electric cells and their application in industry. Mr. Jackson.

Prereq.: Electrical engineering 33, 36 or 37. Elective for students not registered in the electrical engineering curriculum. 3 rec.; or 2 rec. and 1 lab.; 3 cr.

ENGLISH

ALFRED E. RICHARDS, *Professor;* HAROLD H. SCUDDER, *Professor;* WILLIAM G. HENNESSY, *Associate Professor;* LUCINDA P. SMITH, *Associate Professor;* EDMUND A. CORTEZ, *Assistant Professor;* PAUL S. SCHOEDINGER, *Assistant Professor;* CARROLL S. TOWLE, *Assistant Professor;* ROBERT G. WEBSTER, *Assistant Professor;* THOMAS H. MCGRAIL, *Assistant Professor;* SYLVESTER H. BINGHAM, *Assistant Professor;* ROBERT H. GRANT, *Instructor;* BETHYL C. HENNESSY, *Assistant;* BARBARA ROWELL, *Assistant;* CHARLES H. MELNICK, *Graduate Assistant.*

GENERAL REQUIREMENTS

All freshmen are required to take English 1, 2. However, upon the recommendation of the head of the department of English, and with the approval of the dean of his college, the exceptional student who demonstrates his ability to proceed to more advanced work may be excused from the regular course and enrolled in a special section for work of higher grade.

DEPARTMENTAL REQUIREMENTS

A major program in the department of English consists of 24 semester credits of English literature passed with a grade of 75 or better. The following courses are required of all English majors: *Survey of English Literature, Survey of American Literature, Shakespeare's Plays, Chaucer.* Of these courses all but the first-mentioned (*Survey of English Literature,* which is open to freshmen) carry major credit if passed with the required grade of 75 or better.

1 (1), 2 (2). FRESHMAN COMPOSITION. The aim of this course is to enable the student to write correct English. The principles of exposition, description, and narration are studied. There is drill in the mechanics of composition, and there is constant writing of themes both as outside assignments and as laboratory work in class. Two sections, composed of students who have attained high rank in previous tests in this course, will follow a special program directed by Mrs. Lucinda P. Smith, assisted by Mr. McGrail. The entire staff of the department will share in the teaching of the course. Mrs. Smith.

Prereq.: 1 prerequisite for 2. Required of all freshmen.
3 rec.; 3 cr.

3, 4. SURVEY OF ENGLISH LITERATURE. A general survey of English literature from its beginnings to the year 1900. Lectures and recitations. Mr. Schoedinger.

Open to all students. 3 lec. or rec.; 3 cr.

5, (5). PLAY PRODUCTION. This is not an elective, but a laboratory course in the public presentation of notable plays. Members of the course are elected by competitive trial, and credit is given both for acting

and for technical assistance. The course is open to all students except, in the first semester, freshmen. Mr. Hennessy.

½ to 3 cr.

6. Varsity Debating. Open to all students by try-out.

The maximum number of semester credits allowed in any one year will be 4, and for two or more years, 6.

COURSES PRIMARILY FOR SOPHOMORES

7, 8. Advanced Composition. The study and practice of writing brief impressions, followed by the writing of essays, sketches and narrative. Collateral readings; weekly conferences. Each semester's study must be taken in its chronological order, unless special permission to invert that order is given by the instructor in charge. Mr. Towle.

Prereq.: English 1, 2. Elective for sophomores, juniors and seniors. 3 lec. or rec.; 3 cr.

10. News Writing. A practical study of the preparation of articles for newspapers and magazines. It is for all whose vocations will demand frequent writing for publication, and it is a preparation in part for those who intend to take up newspaper work after graduation. It does not cover the entire field of journalism, but the student will be instructed in the duties of a reporter and be given constant practice in writing news stories. Mr. Scudder.

Prereq.: For sophomores, a grade of 75 or better in English 1, 2; for freshmen, the recommendation of the instructor in charge of English 1, 2. 3 lec. or rec.; 3 cr.

11, 12. Survey of American Literature. Lectures and extensive outside reading. Mr. Scudder.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

14. Mediaeval and Elizabethan Drama. A survey of the English drama, exclusive of Shakespeare, from its beginnings to the closing of the theatres (1642). Mr. Scudder and Mr. McGrail.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

15. Non-Dramatic Elizabethan Poetry. A study of the English Renaissance in non-dramatic poetry and its development throughout the sixteenth century, with special reference to Spencer's *Faerie Queene*. Mr. Richards.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

17, 18. English Literature in the Seventeenth Century. Poetry and prose from Shakespeare and Bacon to Swift and Pope,

omitting the drama and the works of Milton. The poetry of John Donne and his school; of Jonson, Herrick and the "Cavaliers"; of Denham, Waller and Dryden; of the followers of Spenser, etc. The prose of such writers as Izaak Walton, Bunyan, Sir Thomas Browne, Fuller, Taylor, and John Dryden. One hour of the week will be devoted to round-table discussion in small groups. Mr. Towle.

Prereq.: English 1, 2; 17 prerequisite for 18. Elective for sophomores, juniors, and seniors. 2 lec. or rec.; 1 lab.; 3 cr. (Given in alternate years; offered in 1938–39.)

20. Pope and His Age. The literature of the first half of the eighteenth century, with special reference to Pope, Swift, Addison, and Steele. Mr. Schoedinger.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

22. Johnson and His Circle. Boswell, Johnson and their time. Mr. Scudder.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

23, 24. Victorian Prose. A study of English prose of the nineteenth century. Particular attention is given during the first semester to the work of Coleridge, Lamb, Carlyle, Hazlitt, and Matthew Arnold; in the second semester to the work of John Ruskin as a writer of brilliant prose, art critic, and social reformer. Mr. Richards and Mr. Webster.

Prereq.: English 1, 2; 23 prerequisite for 24. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

25, 26. Victorian Poetry. A study of English poetry from 1830 to 1900, with special reference to the poetry of Tennyson and Browning. Mr. Schoedinger.

Prereq.: English 1, 2; 25 prerequisite for 26. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

28. The Bible as Literature. A study of the various literary types found in the Bible, and a survey of the influence of the Bible on English literature. Mr. Richards.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

29, 30. Survey of Art. This course stresses the development of architecture, painting, and sculpture as illustrated by representative masterpieces from the Greek, Roman, Gothic, Renaissance and mod-

ern periods. Lectures, assigned readings, and the study of art prints. Mr. Hennessy.

Elective for sophomores, juniors, and seniors. 3 lec.; 3 cr.

32. Modern British Poetry. A study of British poetry written since 1900. Mr. Towle.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

34. Modern American Poetry. A study of American poetry written since 1900. Mr. Towle.

Prereq.: English 1, 2. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

35, (35). Public Speaking. Practice in the use of time, change in pitch, emphasis, and inflection of voice; drills in articulation and pronunciation; exercises in posture and poise; extemporaneous speaking; a foundation course for prospective business men and teachers. Mr. Cortez.

Elective for sophomores, juniors and seniors. 3 rec.; 3 cr.

36. Oral Reading. The art of reading from the page; expressive reading of lyrics and other types of literature; platform reading for entertainment; choric speaking. Students must secure permission of the instructor before enrolling for this course. Mr. Cortez.

Elective for sophomores, juniors, and seniors. 3 rec.; 3 cr.

COURSES PRIMARILY FOR JUNIORS

37, 38. Forum Discussion and Debate. First semester: the proposition and its main issues; sources and tests of evidence; construction of the argumentative brief; principle laws of reasoning; principle fallacies of reasoning; practice debates. Second semester; elements of parliamentary law and parliamentary debates; forum discussion and debate; "round table" discussion; court pleas; sales argument, etc. The subjects for research and debate will be selected from current events of state, national, and international importance. Mr. Cortez.

Prereq.: 37 prerequisite for 38. Elective for juniors and seniors (and for sophomores by permission of the instructor). 3 rec.; 3 cr.

40. Stage Direction. This is a laboratory course in the fundamentals of acting, stage direction, and allied phases of play production. It is designed to fit the needs of prospective teachers, particularly teachers of English. Mr. Hennessy.

Prereq.: The permission of the instructor. Elective for sophomores, juniors, and seniors. 3 lab.; 3 cr.

52. Introduction to Drama. This course is a comprehensive survey of dramatic literature from the Greek drama to the present. Mr. Hennessy.

Elective for juniors, seniors and graduate students. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

53, 54. Shakespeare's Plays. This course comprises a study of the major histories, comedies, and tragedies. Shakespeare is interpreted as poet and as dramatist. Mr. Hennessy.

Prereq.: 53 prerequisite for 54. Elective for juniors, seniors, and graduate students. 3 lec.; 3 cr.

55. Milton. A detailed study of Milton's minor poetry and the *Paradise Lost.* Consideration is also given to the social, political and religious history of Milton's day. Mr. Scudder.

Elective for juniors, seniors, and graduate students. 3 lec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

57. The English Novel in the Eighteenth Century. The novel from Defoe through the Gothic Romance. There will be lectures and constant outside reading. Mr. Schoedinger.

Elective for juniors and seniors, and graduate students. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

59. The English Novel in the Nineteenth Century. A study of the novel from Jane Austen to Thomas Hardy. There will be lectures, recitations, and constant reading. Mr. Scudder.

Elective for juniors, seniors, and graduate students. 3 lec.; 3 cr. (Not given in 1938–39.)

61, 62. The English Romantic Writers. A course dealing with the major writers of the early nineteenth century, such as Wordsworth, Coleridge, Byron, Lamb, Shelley, Hazlitt and Keats. Readings also from the work of many minor writers, especially those of the late eighteenth century. One hour of the week will be devoted to round-table discussion with small groups. Mr. Towle.

Prereq.: 61 prerequisite for 62. Elective for juniors, seniors, and graduate students. 2 lec.; 1 rec.; 3 cr.

63, 64. Advanced American Literature. A series of studies in special fields, the subjects to be announced. In 1938–39 the subjects are: The American Poetry of the Nineteenth Century, and The New England Renaissance. Mr. Scudder.

Elective for juniors, seniors, and graduate students. 3 lec.; 3 cr.

65, 66. WRITING AS AN ART. A course in the study and practice of the forms of writing through an examination of the history of literary criticism. The reading of famous critical essays and of many contemporary opinions, correlated with practice writing of various types. Each student is allowed to spend much of his time with the type he finds most congenial. Collateral readings, with frequent class discussions and conferences. Mr. Towle and Mr. Webster.

Prereq.: English 7. 65 prerequisite for 66. Elective for juniors, seniors, and graduate students. 2 lec.; 1 rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

COURSES PRIMARILY FOR SENIORS

67, 68. CHAUCER. A study of Chaucer's life and times, and a reading of most of his poetry. In the first semester, lectures are given upon Old and Middle English grammar as an introduction to the language of Chaucer, and the longer minor poems are read. In the second semester, *Troilus and Cressida*, and *The Canterbury Tales* are studied. Mr. Richards.

Prereq.: 67 prerequisite for 68. Elective for seniors and graduate students. 3 lec. or rec.; 3 cr.

SERVICE COURSES

41, (41). EXPOSITORY WRITING. Practice in the writing of reports and other papers pertaining to technical subjects. The reports will take the form of recommendation reports, progress reports, and information reports. Other papers will take the form of term papers or short theses. In addition to these, there will be required the writing of business letters of various types, such as letters of application, of complaint, and of sales. Mr. Webster.

Required of seniors in civil, electrical, and mechanical engineering, and of seniors in agriculture. 2 lec.; 2 cr.

ENGLISH-EDUCATION (ENG-ED) 91. PROBLEMS IN THE TEACHING OF HIGH SCHOOL ENGLISH. This course deals specifically with the selection and organization of subject-matter, with the most efficient methods of presenting this material, and with the problems which arise within the wide field of the teaching of high school English. Mr. Grant.

Prereq.: Three years of English courses. Required of students majoring in English who plan to teach English in secondary schools. Elective for students majoring in language, history, or education. 2 lec.; 1 lab.; 3 cr.

ENTOMOLOGY

WALTER C. O'KANE, *Professor;* JAMES G. CONKLIN, *Instructor.*

NOTE.—Work in the department of entomology is largely individualized. So far as possible each student is

permitted to choose the topics to which he will give special attention. This applies to each course offered by the department. Laboratory work may be done at any time that the laboratory is open. Reference books are issued from the department library at any time. Lecture periods are occupied largely with discussion, in which students participate.

1. Principles of Economic Entomology. The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Studies of the life history and control of insect pests. Mr. O'Kane, Mr. Conklin.

Recommended elective for freshmen in agriculture. 2 lec.; 1 lab.; 3 cr.

52. Insects of Orchard and Garden. The application of methods of insect control of typical injurious species. Studies of the life histories and habits of important insect pests of orchard, garden and certain field crops. Adapted especially for students in horticulture and in general agriculture. Mr. O'Kane.

Prereq.: Entomology 1. Elective for juniors and seniors. 1 lec.; 1 lab.; 2 cr. (Given in alternate years; not offered in 1938–39.)

53. Insects of Domestic Animals. The insect enemies of domestic livestock; the life histories, habits and means of control. Adapted especially for students in animal husbandry. Mr. O'Kane.

Prereq.: Entomology 1. Elective for juniors and seniors. 1 lec.; 1 lab.; 2 cr. (Given in alternate years; offered in 1938–39.)

54. Household Insects. Medical Entomology. The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in home economics. Mr. O'Kane.

Required of seniors in institutional management. Elective for juniors and seniors. 1 lec.; 1 lab.; 2 cr.

56. Forest Insects. Studies of the life histories and habits of the more destructive forest insects and the means of their control. Adapted especially for students in forestry. Mr. O'Kane.

Prereq.: Entomology 1. Recommended for juniors in forestry. Elective for others. 1 lec.; 1 lab.; 2 cr.

57, 58. Advanced Entomology. Studies of the anatomy and physiology of insects. The orders and families of insects. Mr. O'Kane, Mr. Conklin.

Prereq.: 57 prerequisite for 58. Open to students only by permission of the head of the department. Required of students specializing in entomology. 2 lec.; 2 lab.; 4 cr.

59, 60. Advanced Economic Entomology. Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice in arranging projects, Studies in the specialized phases of entomology. Mr. O'Kane, Mr. Conklin.

Open to students only by permission of head of department. Prereq.: 59 prerequisite for 60. Required of students specializing in entomology. Hours and credits to be arranged.

For courses primarily for graduate students see catalog of the Graduate school.

FORESTRY

Karl W. Woodward, *Professor;* Clark L. Stevens, *Associate Professor;* Lewis C. Swain, *Instructor.*

2. Principles of Forestry. This course is intended to meet the needs of students who desire to obtain a general knowledge of the principles of forestry. The value of forests, their protection, their utilization, their improvement and regeneration, are discussed with special reference to New Hampshire conditions. Mr. Woodward.

Recommended elective for freshmen in agriculture except those in forestry. 2 lec.; 1 lab.; 3 cr.

4. Principles of Forestry. The same as forestry 2, except that no laboratory work is included. Mr. Woodward.

Elective for any student. 2 lec.; 2 cr.

5, 6. Tree and Wood Identification. This course deals with the characteristics of our native tree species, and with the identification of trees in the field and from specimens. Additional practice in identifying northern species is given during summer camp.

A study is also made of the uses of lumber, the physical properties and the identification of the commercially important woods. Each student is required to provide himself with a hand lens. Mr. Swain.

Recommended elective for freshmen in forestry, elective for others. 2 lec.; 1 lab.; 3 cr.

7, 8. Forest Mensuration. Includes practice in forest mapping; measurement of forest products; timber cruising; and studies of growth and yield of the commercial tree species of New England. The course is continued during summer camp. Each student is required to provide himself with a box compass. Mr. Stevens.

Required of juniors in forestry. Elective for others, with approval of the instructor. 2 lec.; 1 lab.; 3 cr.

9, 10. Silviculture. The art of producing and tending a forest. Includes seed collection, storage and testing; nursery practice; forest

plantations; systems of natural regeneration; intermediate cuttings; forest protection, and discussion of silvicultural practice in the most important forest regions of the United States. Mr. Stevens.

Required of sophomores in forestry. Elective for others, with approval of the instructor. Prereq.: Forestry 5, 6. 2 lec.; 1 lab.; 3 cr.

11, 12. Forest Utilization. Methods and costs of logging and milling in the chief lumber-producing regions of the United States; forest products, their manufacture, marketing and use, together with special problems of the lumber business. Emphasis is placed upon New England conditions. Attendance on instruction trips is required for credit in this course. Mr. Swain.

Required of certain juniors in forestry. Elective for others. 2 lec.; 1 lab.; 3 cr.

13. Forest Improvements. Lectures on the methods of construction and maintenance of the more important physical improvements of the forest. Includes roads, trails, simple bridges, culverts, telephone lines, cabins, lookout stations, waterholes, dams, and recreational facilities. Mr. Swain.

Recommended elective for juniors in forestry. Elective for others, with approval of the instructor. 1 lec.; 1 lab.; 2 cr.

14. Fish and Game Management. This is an introductory course designed to acquaint the student with the fundamental principles underlying the management of wild life as a forest crop. Mr. Stevens.

Recommended elective for juniors in forestry. Elective for others with approval of the instructor. 2 lec.; 2 cr.

15, 16. Thesis. Work to be arranged according to the needs of individual students. Mr. Woodward, Mr. Stevens.

Prereq.: Forestry 5, 6; 7, 8; and 9, 10. Required of certain juniors and seniors in forestry. 2 lec.; 2 or 3 cr.

17. National Forest Administration. The principles and methods employed in the national forests. Mr. Woodward.

Prereq.: Forestry 5, 6; 7, 8; and 9, 10. Recommended elective for seniors. 3 lec.; 3 cr.

18. History of Forestry. The history of forestry, its development and present status in different countries; the work of the Federal government and its management of the national forests; state forest policies; the lumber industry in the United States. Lectures and special readings. Mr. Woodward.

Required of certain seniors in forestry. Elective for others with approval of the instructor. 3 lec.; 3 cr.

19, 20. Forest Management. The management of woodlots and large forest tracts for the purpose of gaining the largest immediate and future returns; and the preparation of working plans to coördinate the protection, improvement, and regeneration of forests so as to make them yield the highest net returns. Mr. Woodward.

Prereq.: Forestry 5, 6; 7, 8; 9, 10; 11, 12. Required of seniors in forestry. 2 lec.; 2 lab.; 4 cr.

21. Practical Fish and Game Management. Given only at summer camp. Lectures, readings and discussions of problems encountered in actual practice. Projects are worked out on the university forest at Passaconaway, N. H., and on a near-by game management area conducted by the United States Forest service. Mr. Stevens.

Elective for juniors in forestry. Prereq.: Forestry 9 and 14. 15 hours per week for 8 weeks. 3 cr.

21.5. Practical Fish and Game Management. A course similar to the preceding, but more extensive in scope, which will be offered also at the summer camp at Passaconaway in 1938. It will be under the direction of Mr. Earl Hoover of the New Hampshire Fish and Game department assisted by other authorities. Mr. Hoover.

Elective for any student, not a forestry junior, who presents evidence of satisfactory training. 45 hours per week for eight weeks. 8 cr.

22. Timber Survey. Given only at summer camp. Investigation of a large block of timberland on the White Mountain national forest. The student prepares a detailed timber survey report and a topographic map of the area. Mr. Stevens, Mr. Swain.

Required of juniors in forestry. Prereq.: Forestry 8, 9, 10 and C. E. 7, 8. 30 hours per week for 8 weeks. 6 cr.

GEOLOGY

George W. White, *Associate Professor;* T. Ralph Meyers, *Assistant Professor;* Donald H. Chapman, *Assistant Professor;* Willard B. Phelps, *Assistant.*

The geology department, located on the second floor of Conant hall, offers courses in the principles of geology, structural and dynamic geology, physiography, mineralogy, economic geology, and paleontology, geography and meteorology.

The courses in geology are designed to give the student a general insight into the materials, structure, and history of the earth upon which he lives. They are intended for the student with broad general interests, who wishes some insight into earth science, as well as for the student who is looking forward to professional or graduate work in geology. The courses are non-technical, in the sense that they do not fit a student to enter the career of professional geology without further training. The

lectures in these courses are supplemented by laboratory exercises and field trips.

Two major programs are suggested. The first is for the student who is seeking a broad cultural training, and should include principles of geology, chemistry, and any four courses in geology for major work. The second, or pre-professional, program includes, besides geology courses, certain other courses which the student will find desirable as a prerequisite for graduate or professional work. Courses which should be included in the pre-professional program are principles of geology, physiographic and structural geology, mineralogy, economic geology, paleontology, field problems, inorganic chemistry, physics, surveying, engineering drawing (M.E. 1, 2), mathematics, and German.

The working equipment of the department includes numerous topographic and geologic maps, and a fairly complete collection of minerals, rocks and fossils. Microscopes are available for problem work in mineralogy, petrology, and paleontology. The departmental museum display a wide variety of geological specimens and contains the Hitchcock collection, the Clough collection, and a portion of the Exeter Historical Society collection.

Few areas present such a wide variety of geological phenomena as the country in and about Durham. Features such as mountain and continental glaciation, marine erosion and deposition, vulcanism, orogeny, and metamorphism, are well shown.

1, 2. Principles of Geology. The study of the earth and its history. A consideration of the forces that have operated to produce land forms and structures, and a discussion of the materials of the earth's crust. These facts will then be applied to the interpretation of past geologic events, together with their effect on the development of life forms. Laboratory study of various land forms of the United States by means of maps; of common minerals and rocks of the earth's crust; and of the more common fossils, will closely parallel the class work. Occasional field trips are taken to nearby points of geologic interest. Mr. White, Mr. Meyers, Mr. Chapman, and Mr. Phelps.

Prereq.: 1 prerequisite for 2. Freshman and sophomore course. 3 lec. or rec.; 1 lab.; 4 cr.

3. Geography of the World. A course designed for the student interested in the essential geographic facts regarding the earth. The earth as a planet and the processes which are at work modifying the appearance of its surface are first briefly discussed. The continents are next considered one by one, with emphasis placed on their physical aspects. Finally, the climates of the world are briefly treated. Mr. Chapman.

This course cannot be used to fill science requirements.
Freshman course. 3 lec. or rec.; 3 cr.

4. Geography of North America. A course intended for the student who is interested more particularly in the North American continent

and its physical aspects. A brief treatment of the weather and climate of the continent is followed by a discussion of the countries, treated regionally. This course concludes with a more intensive study of the physical geography of New England. Mr. Chapman.

This course cannot be used to fill science requirements. Prereq.: Geology 3, or special permission. Freshman course. 3 lec. or rec.; 3 cr.

8. Elementary Meteorology. A general course designed to aid the student in the interpretation of atmospheric phenomena. The major topics for discussion are: the earth as a planet, the heating and circulation of the atmosphere, the seasons, and the nature and movement of the air masses which influence the weather of North America and particularly New England. The course concludes with a brief consideration of some of the practical rules and methods of weather forecasting. Mr. Chapman.

Elective for all students. 2 lec. or rec.; 2 cr. (Formerly given as Meteorology 2.)

11. Physiography. Attention in this course is directed toward the forces which have been at work in producing the present aspect of the land surface, and particularly that of New England. Special emphasis is given to the work of running water, glaciers, and marine agents. Field trips are taken during the fall season to points easily reached from Durham. Mr. Chapman.

Prereq.: Geology 2. Sophomore course. 3 lec. or rec.; 1 lab.; 4 cr.

12. Structural Geology. An advanced study of the structures of the earth's crust and of the dynamics of their formation. Included is discussion of mountain systems, metamorphism, and igneous structures, and of the theories of earth origin. Mr. White.

Prereq.: One course in geology. Sophomore course. 3 lec. or rec.; 1 lab.; 4 cr.

51, 52. Mineralogy. A study of the minerals that make up the earth's crust. A study of crystals, by means of models and specimens showing well defined crystals, will be followed by a study of minerals and their determination by means of physical characteristics; and in addition, the aggregation of minerals to form rocks. Mr. White.

Prereq.: One course in geology and one course in chemistry. 51 prereq. for 52. 2 lec. or rec.; 1 lab.; 3 cr.

53, 54. Economic Geology. First semester: a study of the types of coal and their occurrence in the coal fields of the United States; of petroleum, the structures in which it is found, and the distribution and geology of oil fields, especially of the United States. The geology of cement materials, building stones, and related materials will be treated

briefly. Second semester: a study of the metals, their ores, and the geology of important ore deposits. Mr. Meyers.

Prereq.: One year's work in geology. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

55, 56. Paleontology. A study of the history, development, and morphology of the various groups of plants and animals as recorded by fossils found in the rocks of the earth's crust. More attention will be given to the development of animals than to plants. Mr. Meyers.

Prereq.: One year's work in geology or zoölogy. 55 prerequisite for 56. 2 lec. or rec.; 1 lab.; 3 cr. (Given in alternate years; not offered in 1938–39.)

57, 58. Geologic Problems. A study of special problems by means of conferences, assigned readings and field work. The work will be fitted to the needs of the individual students. Mr. White, Mr. Meyers, and Mr. Chapman.

Prereq.: Permission of the instructor. Credits to be arranged.

71. Human Geography. (See page 180.)

72. Geography of North America. (See page 181.)

SERVICE COURSE

7, (7). General Geology. A general introductory course in physical geology, in which the structures and materials of the earth's crust are discussed, together with the forces which have produced and altered them. Mr. Meyers.

Required of freshmen in chemistry, and juniors in civil engineering. Elective for other students in technology and for students in agriculture. Open to liberal arts students by permission only. 3 lec. or rec.; 3 cr.

HISTORY

Donald C. Babcock, *Professor;* Arthur W. Jones, *Assistant Professor;* Allan B. Partridge, *Assistant Professor;* Philip M. Marston, *Assistant Professor;* William Yale, *Assistant Professor;* Gibson R. Johnson, *Assistant Professor;* Edna Dickey, *Assistant;* Margaret Rhome, *Graduate Assistant.*

A. Monroe Stowe, *Professor* (*History-Education*)

In the courses in history an important place is given to historical reading carried on in the reference room. Oftentimes a considerable part of the work is written.

The statements as to prerequisites, etc., below are for liberal arts

students. Agriculture and technology students should consult the head of the department.

Any department in the college of liberal arts, except geology, home economics, physical education for women, and zoölogy, may be considered as a related department. Students majoring in history are required to take History 55, 56 and 57, 58 before graduation.

COURSES FOR FRESHMEN

The following subject constitutes a basic course, required of all students in the College of Liberal Arts.

1, 2. INTRODUCTION TO CONTEMPORARY CIVILIZATION. This course is designed to give the student a background which will enable him to understand the problems of human society rather than the record of specific historic events. It therefore takes up prehistoric as well as historic social evolution. It aims at the historic explanation of how modern life has come to be what it is, and an appreciation of the problems of contemporary society. Mr. Babcock, Mr. Marston, Mr. Johnson, Mr. Yale, Mr. Partridge, Mr. Jones, Miss Dickey.

Prereq.: 1 prerequisite for 2. 4 lec. or rec.; 4 cr.

3, 4. MODERN EUROPEAN HISTORY. This course is intended to supplement the freshman students' general knowledge of European history, taking up the history of modern Europe, European states, and the expansive development from about 1500 to 1914. Mr. Jones.

Open only to freshmen. 3 lec. or rec.; 3 cr.

COURSES FOR UPPERCLASSMEN

GROUP I

5, 6. COLONIAL AND REVOLUTIONARY AMERICAN HISTORY. A study of colonial beginnings in America, national rivalries, the English colonies, the Revolution, and our national life to 1789. Mr. Marston.

Prereq.: 5 prerequisite for 6. Elective for juniors and seniors, and for sophomores who are taking 7 or 8. 3 lec. or rec.; 3 cr. (Not offered in 1938–39.)

59, 60. THE SOCIAL AND CULTURAL HISTORY OF NEW ENGLAND. This course covers the period of time from the settlements to the present. The material and intellectual aspects peculiar to New England's social and cultural life will be emphasized. It is assumed that the student is familiar with the general history of New England. Mr. Marston.

Prereq.: 59 prerequisite for 60. Elective for juniors and seniors who have taken or are taking 5 and 6 or 7 and 8. 3 lec. or rec.; 3 cr.

7, 8. THE UNITED STATES SINCE 1789. Beginning with the administration of Washington, the great forces of nationalism, expansion, sec-

tionalism, and democracy are traced up to the present time, with reference to as many aspects of our national life as possible, including literary, artistic, scientific, and everyday life-ways, as well as the more usual political and economic events. Mr. Babcock.

Prereq.: 7 prerequisite for 8. Elective for sophomores, juniors, and seniors. 4 lec. or rec.; 4 cr.

9, 10. LATIN-AMERICAN HISTORY. The purpose of the course is threefold: (1) to trace the development and influence of Spanish and Portuguese culture as a wide-spread world force; (2) to see what the history of the Latin-American peoples has been; (3) to relate Latin-America to North America, particularly in view of recent growth in friendly relations. Mr. Partridge.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

GROUP II

11. THE ANCIENT ORIENT. A study of pre-literary culture in the Near East, followed by a consideration of the contributions made in Egypt, Babylonia, Assyria, Chaldea, Palestine, and Persia to civilization prior to the rise of Greece. Mr. Partridge.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Not offered in 1938–39.)

12. HISTORY OF GREECE. An examination of all features of Greek culture and its influence, including adequate attention to the Hellenistic period after the death of Alexander the Great. Mr. Partridge.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Not offered in 1938–39.)

13, 14. HISTORY OF ROME. In the first semester, the pre-literary foundations and legendary origins are studied, followed by an analysis of republican life and institutions to the first century B.C. In the second semester, a study is made of the transition from republic to principate and concludes with the account of the later Roman Empire to the time of Justinian in 565. Mr. Partridge.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

15, 16. MEDIEVAL HISTORY. This survey of the pageant of the Middle Ages begins with the death of Justinian and goes as far as the first crusade in the first semester. The second semester's work carries the student into the 14th century. Mr. Jones.

Prereq.: 15 prerequisite for 16. Elective for juniors and seniors, and for sophomores by permission. 3 lec. or rec.; 3 cr.

17, 18. The Period of the Renaissance. The Renaissance as a regathering of past values and as a forward movement introducing the Modern Period. Mr. Jones.

Prereq.: 17 prerequisite for 18. Elective for juniors and seniors, and for sophomores by permission. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

19, 20. Modern European History. This course takes up the history of the modern European states and of Europe as a whole in its expansive development and world leadership from about 1500 to 1914. Eastern Europe and Asia and Africa are studied as backgrounds for the colonial history of modern times. Mr. Jones.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr. (Students who have received credit for History 3, 4 cannot receive credit for 19, 20.)

21, 22. History of England. A general survey of the history of the British Isles from the time of their discovery to contemporary developments. Attention in the first semester is given chiefly to Anglo-Saxon, Norman, and later medieval times, and to the opening of the modern period, through the reign of Queen Mary Tudor. The second semester begins with the study of the Age of Elizabeth and concludes with an examination of the contemporary history of the British Commonwealth of Nations. Mr. Partridge.

Elective for juniors and seniors, and sophomores by permission. 3 lec. or rec.; 3 cr.

23, 24. Historical Origins and Development of Christianity. An historical survey is made of the life, literature, religion and social development of the Old Testament as a culture background. This is followed by an investigation of the historic data existing about the life, character and teaching of Jesus. The growth and expansion of the Christian movement is traced. The course is designed to furnish students an opportunity to investigate and evaluate their own religious heritage in the light of contemporary thought, and to make a special study of any particular intellectual problems they may have in this field. Mr. Johnson.

Open to sophomores, juniors, and seniors. 3 lec. or discussions; 3 cr.

25, 26. History of Religions. A study of religion as an historic force in society. The nature of religion, its origins, and early development are treated in connection with primitive social history. This is followed by a study of the principal religions of the world, special attention being given to Hinduism, Buddhism, Zoroastrianism, Confucianism and Mohammedanism. The history, literature, and philosophy of the oriental civilizations and cultures are investigated as a background for understanding these religions. Mr. Johnson.

Open to sophomores, juniors, and seniors. 3 lec. or discussions; 3 cr. (Not offered in 1938–39.)

61, 62. The World War. A study of the causes of the World War, of the military, political, and economic developments during the course of the war, and of the Paris Peace Conference. Mr. Yale.

Elective for juniors and seniors by permission of the instructor. 3 lec. or rec.; 3 cr.

63, 64. Recent World History. A study of the post-war world with special emphasis on the historical developments in Europe, the Near, and Far East. Mr. Yale.

Elective for juniors and seniors by permission of the instructor. 3 lec. or rec.; 3 cr.

53, 54. The History of Civilization. This course is designed to show the close connections between the historical development of western society in both Europe and North America and their educational institutions. It traces the early development of educational institutions in the Ancient Orient, Greece, and Rome, through the Dark and Middle Ages down to modern times. It connects the development of modern educational systems in Europe and the United States with nineteenth and twentieth century developments. Mr. Yale.

Elective for seniors. 3 lec. or rec.; 3 cr.

55, 56. The Interpretation of History. An investigation of some of the ways in which thoughtful persons have viewed the historic process as a whole. The aim is the interpretation of life; the method is to combine philosophy, sociology, and history, with emphasis on the latter. Mr. Babcock.

Required of students majoring in history. Elective for juniors and seniors on consultation with the instructor. 3 lec. or discussions; 3 cr. (Not offered in 1938–39.)

57, 58. Historiography. A study of the lives and writings of some of the leading historians from earliest times to the present, with the motive of learning what their contributions were to the scope, method, viewpoint, and literary achievement in the historical field. Mr. Partridge.

Required of students majoring in history. Elective for juniors and seniors. 3 lec. or rec.; 3 cr. (Not offered in 1938–39.)

History-Education (hist-ed) 91. Problems in the Teaching of High School History. This course includes a study of the purposes and objectives of teaching high school history, of the selection and organization of teaching material, and of teaching and testing techniques which may be advantageously used in teaching high school history. The course will include experiments in studying and teaching recent American history. Mr. Stowe.

Open to students who have satisfactorily completed History 7, 8, Political Science 1, 2, Economics 1, 2 or 3, 4, and Education 61. 3 class meetings; 3 cr. For teachers primarily in service, one 2-hour rec.; 2 cr. (See page 181.)

HISTORY-EDUCATION (HIST-ED) 92. PRACTICUM IN THE TEACHING OF HISTORY IN HIGH SCHOOLS. (See page 181.)

HOME ECONOMICS

HELEN F. MCLAUGHLIN, *Professor;* IRMA G. BOWEN, *Assistant Professor;* LILLIAN B. HUDON, *Instructor;* MARION STOLWORTHY, *Instructor;* MARGARET KARR, *Instructor.*

Students majoring in home economics must take Home Economics 1 and 2 before graduation.

1, 2. HOMEMAKING. A brief consideration of the various phases of homemaking and the vocational opportunities open to women. Mrs. McLaughlin.

Basic course for students majoring in home economics. Elective for other students. 3 lec. or demonstrations; 3 cr.

CLOTHING AND TEXTILES

3, 4. CLOTHING SELECTION. Problems in the selection of suitable and becoming clothing. A study of textile materials from the point of view of the consumer. Care and renovation of clothing. Miss Bowen.

Prereq.: 3 prerequisite for 4. 3 lec. or rec.; 3 cr.

5, 6. CLOTHING CONSTRUCTION. Application of the principles of design and development of technique in garment construction. Miss Bowen.

Prereq.: 5 prerequisite for 6. 2 lab.; 2 cr.

7, 8. HISTORIC COSTUME AND DESIGN. The study of costume changes from the primitive to the present, together with something of the historical events that influenced such changes. Adaptation of period costume to modern use. Miss Bowen.

First semester: 3 lec. or rec.; 3 cr. Second semester: 1 lec.; 2 lab.: 1–3 cr.

9, 10. APPLIED DESIGN. Handcrafts for a hobby or for use in camps and playgrounds. The craft cottage is open daily, making some choice in hours for work possible. Students retaining finished products pay for the cost of materials used. Miss Bowen.

1 lec. or rec.: 2 lab.; 1–3 cr.

FOOD AND NUTRITION

15, 16. FOODS. A study of the nutritive values, healthful preservation and preparation, and the attractive and efficient serving of foods. A separate section is given for sophomores in hotel administration.

Prereq.: 15 prerequisite for 16. 1 lec.; 2 lab.; 3 cr.

17, 18. Advanced Foods. A study of advanced problems concerning the selection and preparation of foods, culminating in the solution of individual experimental problems. First semester, experimental projects; second semester, tea room management.

Prereq.: H. E. 15, 16. 17 prerequisite for 18. First semester: 1 lec.; 1 lab.; 2 cr. Second semester: 2 lab.; 2 cr.

19. Nutrition. A study of diet therapy; readings in the current literature of nutrition. Mrs. McLaughlin.

2 rec.; 2 cr.

20. Dietetics. Application of the principles of human nutrition to varying physiological, social, and economic conditions. Mrs. McLaughlin.

2 lec.; 1 lab.; 3 cr.

21. Camp Cookery. A study of cookery especially adapted to camp life.

Elective for forestry students. 1 lec-rec.; 1 lab.; 1 cr. (first ten weeks of semester).

CHILD DEVELOPMENT

25, 26. Child Development. A study of the physical and mental development of the infant and child; his care and training in the home. Miss Karr.

Prereq. or parallel requirement: Education 41, or Psychology 51. 2 lec. or discussions; laboratory work with children in the play group; reference reading; 3 cr.

27, (27). Projects in Child Development. A study of the principles of child guidance. Class discussions based upon the special interests of the students enrolled. Miss Karr.

Prereq.: H.E. 25 and 26. 2 lec. or discussions; laboratory in the play group; reference reading; 2–3 cr.

HOME MANAGEMENT

31, 32. Home Building and Furnishing. The evolution of American housing from the time of the early settlers to the present. Study and discussion of problems pertaining to the selection of a site, the planning, decorating and furnishing of a modern home. Miss Bowen.

3 lec., rec. or conferences; 3 cr.

33. Home Management. A study of the organization of the household as a home, and of the principles involved in its management, including home care of the sick. Miss Karr.

3 lec.; 3 cr.

35, (35). Home Management House. Practice in homemaking; planning, buying, preparation of meals; care of the house and the study of efficient work habits; managerial and dietetic problems; nine weeks' residence in the home management house. Miss Karr.

Required of all vocational home economics majors; elective for other students by permission of the head of the department. Class limited to six. 3 cr.

INSTITUTIONAL MANAGEMENT

41. Institutional Management. A study of the organization, equipment, and management of typical institutions; and of the buying, planning, preparing and serving of meals for large groups. Field trips to study equipment and management of institutions are included in the course. Miss Hudon.

3 lec. or rec.; 3 cr.

43, 44. Institutional Practice. Practical experience in the kitchens and serving rooms of the university Commons. Miss Hudon.

Prereq.: 43 prerequisite for 44. 2 lab.; 2 cr.

46. Furniture and Textiles. Problems in the selection, care and use of furniture and textile materials for institutions. Members of home economics staff.

3 rec.; 3 cr.

48. Field Work in Institutional Practice. 8 to 10 weeks residence and practical experience in an approved hospital or other institution, supplemented by readings and conferences. Mrs. McLaughlin.

4–6 cr.

HOME ECONOMICS EDUCATION

47, (47). Projects in Home Economics. This course provides opportunity for students to work out projects supplementary to or in advance of other courses. Members of home economics staff.

Conferences and assignments; reference readings; 1–3 cr.

Home Economics Education (he-ed) 91. Problems in the Teaching of High School Home Economics. Mrs. McLaughlin and other staff members.

3 lec. or rec.; 3 cr.

Home Economics Education (he-ed) 94. Supervised Teaching in High School Home Economics. Mrs. McLaughlin.

12 weeks supervised teaching, 10 cr.

Home Economics Education (he-ed) 96. Seminar in the Teaching of High School Home Economics. Mrs. McLaughlin and other staff members.

Required of all students who have done supervised teaching. 4 weeks intensive work following period of supervised teaching. 3 cr.

HORTICULTURE

GEORGE F. POTTER, *Professor;* J. RAYMOND HEPLER, *Associate Professor;* L. PHELPS LATIMER, *Assistant Professor;* JAMES MACFARLANE, *Instructor;* HENRY S. CLAPP, *Instructor.*

1. HARVESTING AND MARKETING OF FRUITS. The handling of fruit crops, technicalities of fruit grading, agencies used and problems met in storing, transporting and merchandising the crop, with laboratory practice in packing-house work. Mr. Potter.

Elective for any student. 2 lec.; 1 lab.; 3 cr.

2. ELEMENTARY POMOLOGY—ORCHARD AND SMALL FRUITS. A brief consideration of the principles and practice involved in orcharding and in the culture of the most important of the small fruits. Mr. Potter.

Recommended elective for freshmen in agriculture. 2 lec.; 1 lab.; 3 cr.

3. FRUIT JUDGING. A study of the fruit characters and commercial characteristics of the leading varieties of fruits with special reference to those important in New England. The student is required to become proficient in recognizing varieties, in determining causes of various blemishes, and in judging exhibition fruit. Mr. Latimer.

Elective for any student. 2 lab.; 2 cr.

13. VEGETABLE FORCING. A study of special vegetables as grown under glass. Emphasis is placed upon the commercial phases of the work, including varieties, culture, and marketing. Each student is required to grow crops from seeding to maturity. Mr. Hepler.

Elective for any student. 2 lec.; 1 lab.; 3 cr.

14. VEGETABLE GARDENING. A study of garden soils, testing, and planting seeds, selection of varieties with reference to New Hampshire conditions, construction and management of hotbeds and cold frames, and the fertilization, cultivation, and irrigation of the garden. Mr. Hepler.

Recommended elective for freshmen in agriculture. 2 lec.; 1 lab.; 3 cr.

26. ORNAMENTAL WOODY PLANTS IN SPRING. Woody plants used for landscape purposes in New Hampshire and northern New England as they appear in spring and summer. Mr. Clapp.

Required of horticulture students who do not elect horticulture 55 or 65. Elective for any other student. 1 lec.; 2 lab.; 3 cr.

27. Ornamental Woody Plants in Autumn. The identification of ornamental woody plants for landscape use in New Hampshire and northern New England. The characteristics of the plants in fall and early winter are particularly noted. Mr. Clapp.

Required of horticulture students who do not elect horticulture 55 or 65. Elective for other sophomores, juniors, or seniors. Preferably preceded by horticulture 26. 1 lec.; 2 lab.; 3 cr.

28. Elementary Landscape Design. The principles involved in ornamental and landscape gardening. Special attention is given to beautifying the home surroundings. Mr. Clapp.

Elective for any student. 2 lec.; 1 lab.; 3 cr.

38. Floral Design. This course is arranged to instruct in the principles and theories of floral design and the use of flowers in the home. To a limited extent, a survey is made of the use of flowers at public functions held in halls and churches. Participation in the actual practice of floral arrangement will be required of each student. The flowers used in the laboratory become the property of the student upon the payment of a $3.00 laboratory fee. Mr. Clapp.

Elective for any student. Registration by permission of the instructor. 1 lab.; 1 cr.

39. Greenhouse Construction and Management. This course treats of modern methods of greenhouse work and the more important plants grown commercially under glass. Varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering plants and ventilating greenhouses. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Mr. Macfarlane.

Elective for any student. 2 lec.; 1 lab.; 3 cr.

40. Outdoor Floriculture. A study of the art of growing flowers in the garden. It includes the classification and culture of flowering annuals, herbaceous perennials, bulbs and bedding plants for the outdoor garden. Lecture and laboratory work is supplemented by field trips. Mr. Macfarlane.

Elective for any student. 2 lec.; 1 lab.; 3 cr.

41, 42. Advanced Horticulture. Subject matter in any phase of horticulture (with laboratory practice if desirable) to meet the needs of special students or groups of students. Mr. Potter and staff.

Elective for juniors and seniors. Students must obtain permission to register from the head of the department. Hours and credits to be arranged.

44. Advanced Pomology Laboratory. Seasonal practice work in fruit growing including such operations as pruning, grafting, planting, and spraying; or similar practice in growing vegetables or ornamental plants. Students are expected to spend two half-days each week in the orchard, garden or greenhouses, and will meet for one hour to discuss fundamental principles involved. Mr. Potter.

Prereq.: Horticulture 2, 14 or 40. Elective for any student. 1 lec.; 4 lab.; 5 cr.

48, 49. Beekeeping. The life history and habits of honey bees and their adaptation to apiary conditions are given in the second semester, which should preferably precede the first. The laboratory work includes the assembling and use of hives and hive fittings, and practice in handling bees. In the first semester attention is given to the principles and methods underlying the production of commercial crops of comb and extracted honey, with laboratory practice in the care and protection of bees during the fall and winter, the extraction of honey and the preparation for market of extracted honey, comb honey, and wax. Mr. Hepler.

Elective for any student. 1 lec.; 1 lab.; 2 cr.

54. Advanced Pomology: Orchard and Small Fruits. A detailed study of fundamental principles and experimental data and their application to orchard problems such as growth and rest period in fruit plants, water requirements, soil management, pruning, fruit bud formation, fruit setting, pollination, thinning, and winter injury. Mr. Latimer.

Prereq.: Botany 1, 2 and horticulture 2. Elective for juniors and seniors. 2 lec.; 2 cr.

55. Systematic Survey of Fruits. The important species of fruits and nuts of temperate regions and their botanical relationships are studied. The student is expected to become familiar with the history, distribution, and merits of each species, and the horticultural varieties developed from it. Mr. Latimer.

Prereq.: Botany 1, 2 and horticulture 2. Elective for juniors and seniors. Required of seniors in horticulture who have not taken horticulture 65 or horticulture 26 and 27. 2 lec.; 2 cr. (Given in alternate years; offered in 1938–39.)

65. Advanced Vegetable Gardening. This course deals with the management of commercial vegetable gardens. It also includes a systematic study of the species and varieties of the more important families of vegetables. Mr. Hepler.

Prereq.: Horticulture 14. Required of horticulture students who do not elect horticulture 55 or horticulture 26 and 27. Elective for juniors and seniors. 2 lec.; 1 lab.; 3 cr.

91, 92. Horticultural Seminar. A review of recent horticultural literature and methods of investigational work. Each student is required to prepare and present a term paper on some horticultural topic. Mr. Potter and staff.

Required of seniors in horticulture. Other students must obtain permission to enroll. 2 lec.; 2 cr.

94. Evolution and Improvement of Plants. The application of the principles of genetics to agricultural plant-breeding. Hybridization and selection are studied as means of improving horticultural varieties of plants. Mr. Potter.

Prereq.: Zoölogy 49. Elective for any student. 2 lec.; 2 cr. (Given in alternate years; offered in 1938–39.)

HOTEL ADMINISTRATION

Raymond R. Starke, *Assistant Professor.*

The following courses in hotel administration are open to students in hotel administration, and to students majoring in other departments by permission of the instructor provided such students have had the proper prerequisites.

1. Orientation. Designed to introduce the student to the life of the university, and in particular to the work of the department of hotel administration.

Required of freshmen in hotel administration. 2 lec. or rec.; 1 cr.

5. Hotel Operation. The fundamental problems of operation such as location, equipment, personnel, rate structure and the relation of the individual institution to the industry in general.

Required of juniors in hotel administration. 2 lec. or rec.; 2 cr.

7. Hotel Public Relations. The relations of the hotel with the public, either as prospective or present guests. An attempt will be made to introduce work on sales promotion media and advertising.

Required of juniors in hotel administration. Open to others with permission of the instructor. 3 lec. or rec.; 3 cr.

8. Front Office Procedure. A study of the layout of the hotel office, the members of the staff and their relation to other staffs of the hotel. Equipment, and procedures of keeping guest accounts.

Required of juniors or seniors in hotel administration. Open to others by permission of the instructor. 1 class discussion; 1 cr.

21, 22. Introductory Hotel Engineering. The application of selected topics of physical science to problems related to hotel buildings and their equipment.

Required of sophomores in hotel administration. Open to others by permission of the instructor. 3 lec. or rec.; 1 lab.; 4 cr.

40, 42, 44, 46. Lectures on Hotel Management. Delivered by representative and well-known men in the hotel business and allied fields. It is expected all students in hotel administration will register for this course every year.

40 elective for freshmen. 42, 44, 46 required of sophomores, juniors, and seniors respectively. 1 lec. and discussion period of 2 hours; 1 cr.

LANGUAGES

Clifford S. Parker, *Professor;* John S. Walsh, *Associate Professor;* Julio Berzunza, *Assistant Professor;* Paul P. Grigaut, *Assistant Professor;* John A. Floyd, *Instructor;* James T. Schoolcraft, Jr., *Instructor;* Albert F. Buffington, *Instructor;* Terrence J. Rafferty, *Assistant;* Lucille L. Lamoureux, *Graduate Assistant.*

Courses 1, 2 and 3, 4 in French, German, and Spanish are planned particularly to help students acquire a reading knowledge of the respective language and thus enable them (1) to pass the reading test described on page 121 of the catalog, and (2) to utilize the language as an asset in other fields of learning and along many vocational lines.

The advanced courses have two main objectives: (1) to prepare students to become teachers of French, German, Latin, or Spanish in secondary schools; (2) to give all students a valuable acquaintance with the language, literature, and civilization of foreign countries in ancient and modern times.

For special requirements expected of majors in languages, students should consult the head of the department.

All students are cordially invited to attend the weekly meetings of the French club for practice in conversational French.

FRENCH

(*Freshmen will be assigned to French 1, French 3, or French 5, on the basis of their performance in the French placement examination in freshman week.*)

1, 2. Elementary French. Elements of French grammar, reading of simple prose, oral practice, dictation. The course will be sectioned for those entering with credit and without credit in high school French. Mr. Floyd, Mr. Rafferty, Miss Lamoureux.

Prereq.: 1 prerequisite for 2. 5 rec.; 4 cr.

3, 4. Intermediate French. Reading and translation, review of grammar, oral practice, composition. Mr. Grigaut, Mr. Rafferty, Miss Lamoureux.

Prereq.: French 2 or its equivalent. 3 prerequisite for 4. 3 rec.; 3 cr.

5, 6. Masterpieces of French Literature. Prose and poetry of some of the most important writers of the 17th, 18th, and 19th centuries; history of French civilization; composition and oral practice. Mr. Parker, Mr. Grigaut.

Prereq.: French 4. 5 prerequisite for 6. 3 rec.; 3 cr.

11, 12. French Classicism. This course, covering the period from 1600 to 1750, will trace the rise and development of the classical ideal in French literature, study the masterpieces of the great writers of the age of Louis XIV, and examine the decline and disintegration of classicism in the 18th century. Mr. Parker.

Prereq.: French 6. 11 prerequisite for 12. 3 rec.; 3 cr.

13, 14. French Composition and Conversation. The use of written and spoken French is taught by careful attention to pronunciation, composition and grammar.

This course is especially valuable for students who wish to teach French and conduct French clubs. Such students will have an opportunity to coöperate with the instructor in the preparation and presentation of French plays. This course should be taken by every student desiring to obtain departmental recommendation for the teaching of French. Enrollment is limited to twenty students per section. Permission of the instructor or of the head of the department is required before enrollment. Mr. Floyd.

Prereq.: French 4 with grade of 75 or better; or French 6. 13 prerequisite for 14. 3 rec.; 3 cr.

53, 54. French Romanticism. This course, covering the period from 1750 to 1850, will begin with a study of J. J. Rousseau's work and influence, and will continue with the important writers of the Romantic school in the 19th century, and analyze the intermingling of Romanticism and Realism in the work of Balzac. Mr. Parker.

Prereq.: French 12. 53 prerequisite for 54. 3 rec.; 3 cr.

57, 58. French Literature from 1850 to the Present. This course will study Realism and Naturalism in the novel and drama, the Parnassian and Symbolist schools in poetry, the psychological novels of Bourget, and the various schools and trends of the late 19th and early 20th centuries. Conducted largely in French. Mr. Grigaut.

Prereq.: French 12 or 54. 57 prerequisite for 58. 3 rec.; 3 cr.

61, 62. FRENCH GRAMMAR. This course, intended primarily for those who intend to teach French, will be devoted to a systematic study of French grammar in all its phases from elementary to highly advanced. Mr. Floyd.

Prereq.: Permission of the instructor or of the head of the department. Permission will be granted only to juniors, seniors, and graduate students. 61 prerequisite for 62. 3 rec.; 3 cr.

63, 64. FRENCH LITERATURE AND CIVILIZATION OF THE MIDDLE AGES AND THE RENAISSANCE. A study of the various forms and masterpieces of French literature from the beginning to the year 1600, with consideration of their historical and social background. Lectures, extensive reading, reports, and recitations. Recommended for seniors and graduate students. Mr. Parker.

Prereq.: French 12 or 54. 63 prerequisite for 64. 2 lec.; 2 cr.

67, 68. SURVEY OF MODERN EUROPEAN LITERATURE. The Renaissance, Classicism, Romanticism, and Realism will be studied in this course as international movements. Stress will be laid, not upon the details of each national literature, but upon the interdependence of the literatures of the various countries. Literature will be interpreted also as a product of changing patterns of civilization and social ideas. The required reading may be done in the original language or in translations. Conducted in English. Mr. Grigaut.

Prereq.: Junior, senior, or graduate standing. 3 rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

71, 72. STUDIES IN MODERN FRENCH LITERATURE. This course will take up several of the greatest French writers from 1600 to 1900 for a detailed and comprehensive study of their work. The choice of writers to be studied in a given year will depend upon the needs or tastes of the students electing the course. The work will be conducted largely in French. Mr. Grigaut.

Prereq.: Senior or graduate standing. 71 prerequisite for 72. 3 rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

FRENCH-EDUCATION (FR-ED) 91. PROBLEMS IN THE TEACHING OF FRENCH IN THE HIGH SCHOOL. This course will study the special objectives, methods, and problems of high school French. It is open only to seniors and graduate students who are planning to teach. Visits to schools to observe the work of experienced teachers will be arranged. Students in this course may be given an opportunity to assist in the work of French 1, 2. Mr. Floyd.

Prereq.: Permission of the head of the department. 3 rec.; 3 cr.

GERMAN

1, 2. Elementary German. This course has for its aim the teaching of the fundamentals of German grammar as a necessary foundation for reading. Composition, conversation, dictation, memory work, and the reading of a large amount of simplified prose are included in the work of the course. Mr. Parker, Mr. Schoolcraft, Mr. Buffington.

3 rec.; 3 cr.

3, 4. German Reading and Composition. This course is a continuation of elementary German, with special emphasis placed on reading. Mr. Schoolcraft.

Prereq.: German 2 or two years of high school German. 3 prerequisite for 4. 3 rec.; 3 cr.

5, 6. Scientific German. This course is for pre-medical students and for those in physics, chemistry, geology, forestry, agriculture, and engineering. Its aim is to facilitate the reading of German scientific treatises. Mr. Schoolcraft.

Prereq.: German 2 or two years of high school German. 5 prerequisite for 6. 3 rec.; 3 cr.

11, 12. German Literature from 1750 to the end of the Classical Period. Lectures, interpretations, collateral reading, and reports. The lectures in this course deal with the development of German literature during the epoch of the *Aufklärung* and the *Sturm und Drang* to the end of the classical period. Lessing, Goethe, and Schiller are the authors chiefly studied. Mr. Buffington.

Prereq.: German 4 or the equivalent. 11 prerequisite for 12. 3 class hours; 3 cr.

13, 14. German Conversation and Composition. This course is especially recommended for students who desire a fluent practical command of spoken and written German. As far as possible, class discussions are conducted in German. There is opportunity for informal conversation, for discussion in German of topics prepared in advance, and for free German composition. Mr. Buffington.

Prereq.: German 4. 13 prerequisite for 14. 3 rec.; 3 cr. Given in alternate years; not offered in 1938–39.)

53, 54. German Romanticism. Lectures, interpretations, collateral reading, and reports. The lectures in this course trace the revival of the historical and imaginative Middle ages in the first half of the nineteenth century. Mr. Buffington.

Prereq.: Three years of college German or the equivalent. 54. 3 class hours; 3 cr. (Given in alternate years; offered in 1938–39.)

57, 58. Modern German Literature. Lectures, interpretations, collateral reading, and reports. The purpose of the lectures in this

course is to trace the development of German literature from 1832 to the present, with special emphasis on the novel and drama. Among the authors considered are Grillparzer, Hebbel, Ludwig, Keller, Meyer, Wagner, Hauptmann, Sudermann, Thomas Mann, Rilke, George, and Schnitzler. Mr. Schoolcraft.

Prereq.: Three years of college German or the equivalent. 57 prerequisite for 58. 3 class hours; 3 cr. (Given in alternate years; offered in 1938–39.)

63, 64. History of German Literature. Lectures, interpretations, and collateral reading. The lectures in this course trace the development of the literature from pagan to modern times. Representative works are read both in and out of class. The history of German civilization is taken up parallel with the history of literature. Mr. Schoolcraft.

Prereq.: Three years of college German or the equivalent. 63 prerequisite for 64. 3 class hours; 3 cr. (Given in alternate years; not offered in 1938–39.)

GREEK

1, 2. Elementary Greek. Grammar, composition, translation. Mr. Walsh.

Prereq.: permission of the instructor. 1 prerequisite for 2. 3 rec.; 3 cr. (Given every third year; not offered in 1938–39.)

LATIN

3, 4. Intermediate Latin. This course will be devoted to the improvement of the student's ability to read Latin prose and poetry. The first part of the year will be given over to a concentrated review of grammar, vocabulary, and principles of language. Work on unseen passages and prepared lessons in prose authors and poets will occupy the rest of the year. Mr. Walsh.

Prereq.: Two years of high school Latin. 3 prerequisite for 4. 3 rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

5, 6. Latin Poetry. Study of selected poems of Catullus, Ovid, Phaedrus, Martial and the odes and epodes of Horace. Translations, lectures, and study of Latin influence on English poetry. Mr. Walsh.

Prereq.: Latin 4, or three years of high school Latin. 5 prerequisite for 6. 3 rec.; 3 cr.

7, 8. Latin Prose and Comedy. The plays of Plautus and Terence, Livy's History (Books I and II), and Pliny's Letters will be studied for their value as mirrors of the life and history of Rome as well as for their literary value. Mr. Walsh.

Prereq.: Latin 4. 7 prerequisite for 8. 3 rec.; 3 cr.

27, 28. Survey of Greek and Roman Literature. A study of the masterpieces of Greek and Roman literature in translations. The environments, ideals, and personalities of the great writers of antiquity will be studied in order to understand the contributions of Greece and Rome to the modern world. This course is intended to be (1) a cultural course for the general student who, lacking a sufficient knowledge of Greek and Latin to read Greek and Roman literature in the original languages, nevertheless realizes the value of being acquainted with this important subject-matter; and (2) a background course for majors in such subjects as English, history, Latin, or one of the modern languages and literatures. This survey of literature in translation is continued in French 67, 68. Mr. Walsh.

3 rec.; 3 cr.

51, 52. Philosophy and Satire. Particular attention will be paid to the study of philosophy, religion, natural science, and social theories of the Romans, as exemplified in the writings of Horace, Martial, and Cicero. Mr. Walsh.

Prereq.: Latin 8. 51 prerequisite for 52. 3 rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

55, 56. Literature and History. This course offers a comprehensive view of Latin literature of the Golden Age. The works of Caesar, Cicero, and Virgil will be studied for their literary value and historical content. The history of Rome during the Golden Age will be studied in order to provide the background necessary to the student or teacher of the classics. Mr. Walsh.

Prereq.: Latin 8. 55 prerequisite for 56. 3 rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

63, 64. Latin Composition and Teaching Methods. Translation of English narrative, beginning with the fundamentals of grammar and progressing to a study of prose style and effective idiomatic expression. This course is open to those who have taken or are taking another course in college Latin and is most necessary for prospective teachers of Latin.

Prereq.: 63 prerequisite for 64. 3 rec.; 3 cr.

SPANISH

1, 2. Elementary Spanish. Elements of Spanish grammar, reading of simple prose, oral practice, dictation. Mr. Berzunza, Mr. Floyd, Mr. Rafferty.

Prereq.: 1 prerequisite for 2. 3 rec.; 3 cr.

3, 4. Modern Spanish Prose and Poetry. Review of grammar, memorization, composition, oral practice and reading. Mr. Berzunza.

Prereq.: Spanish 2 or its equivalent. Freshmen who offer two or more units of Spanish for admission to college may take this course. 3 prerequisite for 4. 3 rec.; 3 cr.

7, 8. The Spanish Novel. In the first part of the course, representative novelists of the modern period such as Fernán Caballero, Valera, Pérez, Galdós, Pardo Bazán and Palacio Valdés form the subject of study. In the latter part, Cervantes will be studied. Collateral reading, reports, and lectures on the history of the novel. Mr. Berzunza.

Prereq.: Spanish 4. 7 prerequisite for 8. 3 rec.; 3 cr.
(Given in alternate years; offered in 1938–39.)

11, 12. Spanish Drama. Dramas of Lope de Vega, Calderón, Echegaray, the Brothers Alvarez Quintero, Benavente, and others. This course is carried on as far as possible in Spanish. Mr. Berzunza.

Prereq.: Spanish 4. 11 prerequisite for 12. 3 rec.; 3 cr.
(Given in alternate years; not offered in 1938–39.)

13, 14. Spanish Composition and Conversation. The use of written and spoken Spanish is taught by careful attention to pronunciation, grammar, and composition.

This course is especially valuable for students who wish to teach Spanish and conduct Spanish clubs. Permission of the instructor is required before enrollment. Mr. Berzunza.

Prereq.: Spanish 4. 13 prerequisite for 14. 3 rec.; 3 cr.
(Not offered in 1938–39.)

MATHEMATICS

Hermon L. Slobin, *Professor;* George N. Bauer, *Professor;* Walter E. Wilbur, *Associate Professor;* *Marvin R. Solt, *Assistant Professor;* Miltiades S. Demos, *Assistant Professor;* William L. Kichline, *Instructor;* Donald M. Perkins, *Instructor;* Samuel A. Stone, *Instructor.*

1. Algebra. A study of algebra, beginning with a review of the fundamental principles of high school algebra and continuing with the subject matter of mathematics 5. This course is designed for students whose high school training does not fit them for mathematics 5. Mr. Perkins.

Prereq.: Two years of mathematics in high school including at least one year of algebra. 6 rec.; 4 cr.

2. Trigonometry. The theory and applications of plane trigonometry and the analytic geometry of the straight line and certain special curves. Mr. Perkins.

Prereq.: Mathematics 1, or its equivalent. 5 rec.; 4 cr.

3. Analytic Geometry. A course in analytic geometry equivalent to that part of mathematics 6 covering analytic geometry. Mr. Wilbur and Mr. Solt.

Prereq.: Mathematics 2, or its equivalent. 3 rec.; 3 cr.

* Leave of absence, 1938–39.

5, 6. First Year Mathematics. This constitutes a course in algebra, trigonometry, and analytic geometry. Mr. Slobin, Mr. Wilbur, Mr. Demos, Mr. Kichline, Mr. Perkins and Mr. Stone.

Prereq.: See requirements of mathematics for admission to College of Technology. 6 rec.; 5 cr.

7, 8. Calculus. Applications of differentiation and integration; special methods of integration; the definite integral, applications of the definite integral to geometry, physics, and mechanics; introduction to sequence and series. Mr. Slobin, Mr. Solt, Mr. Demos, Mr. Kichline and Mr. Perkins.

Prereq.: Mathematics 3 or 6. 3 rec.; 3 cr.

10. Astronomy. A brief descriptive course. The earth as an astronomical body; the sun and the solar system; the constellations; the stars. Mr. Wilbur and Mr. Solt.

3 rec.; 3 cr.

20. Solid Geometry. Elements of solid geometry. Mr. Perkins.

Prereq.: High school algebra and plane geometry. 2 rec.; 2 cr.

21, 22. Mathematics for Students of Agriculture. Elements of algebra, geometry and trigonometry. Mr. Wilbur, Mr. Solt, Mr. Kichline and Mr. Stone.

3 rec.; 3 cr.

31, 32. Elementary Mathematical Analysis. This course is designed to prepare students for the study of statistics and mathematics of finance. It uses both analytical and graphical methods. The subjects studied are some of the fundamental functions, logarithmic computations, the simpler elements of least squares, etc. Emphasis is placed upon finding mathematical laws or formulæ from empirical data. Mr. Bauer, Mr. Wilbur and Mr. Kichline.

Prereq.: High school algebra and plane geometry. 3 rec.; 3 cr.

34. Mathematics of Finance. A study of simple and compound interest, discount, annuities, depreciation, evaluation of securities, building and loan associations, and the elements of life insurance. Mr. Wilbur.

Prereq.: Mathematics 31, 5 or 1. 3 rec.; 3 cr.

41, 42. Statistical Methods. This is a basic course and aims to present some of the fundamental principles and methods of statistics. Illustrative material drawn from several fields of study including education, business, sociology, and chance. It deals with such topics as the graphical representation of statistical material, frequency distri-

bution, measure of dispersion, averages, time series, index numbers, correlation and estimations. Mr. Bauer.

Prereq.: Mathematics 32, 6 or 3. 3 rec.; 3 cr.

51, 52. Advanced Calculus, Differential Equations, Vector Analysis and Their Application to Engineering Problems. Mr. Solt, Mr. Demos, and Mr. Kichline.

Prereq.: Mathematics 8. 3 rec.; 3 cr.

53. Economic and Social Statistics. Applications of the statistical method to economic and social problems. Mr. Bauer.

Prereq.: Mathematics 42. 3 rec.; 3 cr.

55, 56. Advanced Plane and Solid Analytical Geometry. Mr. Solt.

Prereq.: Mathematics 8. 3 rec.; 3 cr. (Given in 1937–38 and thereafter in alternate years.)

57. The History of Mathematics. This course is designed especially for those preparing to teach mathematics in the high school. It aims to give an historical background and an appreciation of the development of various fields of mathematics. Mr. Wilbur.

Prereq.: Mathematics 4, or 7. 3 rec.; 3 cr. (Given in alternate years; not offered in 1937–38.)

61, 62. Sequences and Series. An introduction to advanced analysis. Mr. Slobin.

Prereq.: Mathematics 8. 3 rec.; 3 cr.

71, 72. Advanced Algebra. The following topics will be treated in this course: matrix theory, including elementary divisors and invariant factors; linear transformations; quadratic bilinear, and Hermitian forms; invariants and covariants with geometric applications; and topics from the theory of equations, including symmetric functions, and groups of substitutions. Mr. Demos.

Prereq.: Mathematics 8. 3 rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

Mathematics-Education (math-ed) 91. Problems in the Teaching of High School Mathematics. A study of the aims and values of secondary school mathematics, the recommendations of the national committee on mathematics requirements, and the state board requirements; also a study of the subject-matter and the sequence in which it should be presented in both junior and senior high schools, and the various techniques used in teaching secondary school mathematics. Errors, testing program, and remedial teaching will be included. Lectures, assigned readings and discussion. Mr. Wilbur.

Prereq.: Mathmaticse 8, or 34 and 7. Students preparing to teach mathematics in high school should register for this course. 3 rec.; 3 cr.

MECHANICAL ENGINEERING

GEORGE W. CASE, *Professor;* EDWARD L. GETCHELL, *Associate Professor;* THOMAS J. LATON, *Assistant Professor;* EDWARD T. DONOVAN, *Assistant Professor;* E. HOWARD STOLWORTHY, *Assistant Professor;* LYMAN J. BATCHELDER, *Instructor;* JOHN C. TONKIN, *Instructor;* ELIAS O'CONNELL, *Instructor;* ALBERT G. WELCH, *Instructor*

The department of mechanical engineering is located in DeMeritt hall. On the second and third floors are the advanced drawing and designing rooms. In addition to these drafting rooms there are two lecture rooms, and department offices. One of the lecture rooms is equipped with a motion picture machine and stereopticon lantern for illustrated lectures.

In the basement are located certain of the mechanical engineering laboratories, one of which is the laboratory equipped with the apparatus for making analyses of flue gases, for calorimetric determinations of the heat values of solid and liquid fuels, and for conducting the usual work in heat treatment of steel. Apparatus needed in determining the viscosity and flash points of lubricants as well as an oil testing machine for determining the lubricating and wearing qualities of lubricants is located in the automotive laboratory in the Shops. Materials testing machines of this department are located in the basement of Conant hall.

The main room of the DeMeritt laboratories is given over to the testing of steam, gas and hydraulic machinery as well as of air compressors, air conditioning, refrigeration and heat transfer apparatus.

The university heating plant has been designed to serve also as a steam laboratory for this department.

Aëronautical equipment and internal combustion engines are located in the automotive laboratory at the rear of the Shops.

The wood shop is well equipped with woodworking machinery.

The equipment of the machine shop consists of the type of machine tools used in an up-to-date commercial shop, and a large number of small tools, including micrometers, calipers and gauges necessary for accurate work.

The forge shop is equipped with down-draft forges, steam hammer and all necessary small tools. Equipment for electric and acetylene welding is located in the forge shop.

1, 2. ENGINEERING DRAWING. The fundamentals of engineering drawing, including free-hand lettering, use of drawing instruments, the solution of problems in engineering drawing by applying the principles of descriptive geometry, including a brief study of isometric drawing. Mr. Laton, Mr. Stolworthy, and Mr. Welch.

1 required of all Technology freshmen. 2 required of civil, electrical and mechanical engineering freshmen. 2 lab.; 2 cr.

M.E. (1) MECHANICAL DRAWING. Work in lettering, the plotting and interpretation of charts and graphs, and the use of drawing instru-

ments. Most of the course is devoted to a study of projections of machinery and simple construction problems.

Required of freshmen in hotel administration. Elective for others by permission of the instructor. 2 lab.; 2 cr.

3. MACHINE DRAWING. Application of the principles of engineering drawing to the drawing of machine parts. Various pictorial systems are studied as an aid in sketching. Commercial drafting room methods are employed in sketching machine parts, drawing from sketches, and making tracings. Reproduction methods and modern drafting room organizations are studied. Mr. Laton.

Prereq.: Mechanical engineering 1. Required of electrical and mechanical engineering sophomores. 2 lab.; 2 cr.

4. KINEMATICS. A study of motion in machine construction; belts, and other flexible connectors; gears and gear teeth; wheels in trains; epicyclic trains; cams; instantaneous centers; linkwork, velocity and acceleration diagrams. Mr. Laton.

Prereq.: Mechanical engineering 1. Required of electrical and mechanical engineering sophomores. 2 rec.; 2 lab.; 3 cr.

5, 6. MECHANICAL LABORATORY. This course is primarily to acquaint the student with the field of mechanical engineering. The student will be introduced to the mechanical laboratory and the University power plant and familiarized with the equipment therein. Problems in mechanical engineering practice will be presented and solved. Mr. Donovan.

Required of sophomores in mechanical engineering. 1 lab.; 1 cr.

7, 8. MECHANICS. A study of forces and moment of forces; determination of stresses in trusses and cranes; centroids and center of gravity; rectilinear and curvilinear motion; translation and rotation of bodies; work, power and energy. The application of Mechanics to the determination of stress and strain in rigid bodies. The study of thin walled cylinders; riveted joints; torsion; transverse loading of beams; deflection in beams of all kinds; study of columns; compound stresses as applied to design of machine parts. Work in the second semester to be paralleled by exercises in the materials laboratory. Mr. Getchell.

Prereq.: Mathematics 8. Required of juniors in mechanical engineering. 7: 4 rec.; 4 cr. 8: 3 rec.; 1 lab.; 4 cr.

9, 10. MECHANICS. Similar to 7 and 8, but with those portions having application to the design of machine parts omitted. Mr. Getchell.

Prereq.: Mathematics 8. Required of juniors in civil and electrical engineering. 9: 3 rec.; 3 cr. 10: 3 rec.; 1 lab.; 4 cr.

12. Mechanics. Principles of Mechanics as applied to architectural work. Study of force systems, moments, equilibrium, trusses, center of gravity and moment of inertia; tension, compression and shear; riveted joints; strength and deflection of beams; columns; reinforced concrete. Mr. Getchell.

Required of junior architects. 3 rec.; 3 cr.

13. Manufacture of Iron and Steel. Study of the location of ores and other raw materials entering into the manufacture of pig iron; of the blast furnace and conversion of pig iron into wrought iron; Bessemer and open hearth steels, and of the manufacture of steel by electrical methods. Course to be paralleled by a laboratory devoted to the identification and heat treatment of various types of steel. Mr. Getchell.

Required of seniors in mechanical engineering. 2 rec.; 1 lab.; 3 cr.

15, 16. Machine Design. The application of the principles of Mechanics to the design of machine elements. This work to be taken up with the idea of manufacturing the parts in the most economical manner in the shops. General principles of design will be followed rather than attempting to develop any particular system of procedure. Mr. Laton.

Prereq.: Mechanical engineering 8. Required of senior mechanical engineers. 1 rec.; 2 lab.; 3 cr.

21. Heat Power Engineering. The fundamental theory of engineering thermodynamics is studied and its applications to steam power plant and internal combustion equipment is briefly considered. Mr. Welch.

Prereq.: Mathematics 7 and physics 8. Required of civil engineering juniors. 3 rec.; 3 cr.

22. Meteorology. Fundamental physical and thermodynamic laws and general structure of the atmosphere. Air mass theory and a brief study of the technicalities underlying forecasting of atmospheric changes. Mr. Stolworthy.

Prereq.: Physics 7 or its equivalent. Optional for seniors in mechanical engineering; to be taken concurrently with mechanical engineering 38. Elective for others. 2 lec.; 2 cr.

23, 24. Thermodynamics. A study of the fundamental laws of thermodynamics and their relation to the operation of mechanisms using gases and vapors as their working substances. Mr. Donovan.

Prereq.: Mathematics 7. Required of junior mechanical engineers. 3 rec.; 3 cr.

25, 26. Heat Power Engineering. A study of the laws of engineering thermodynamics and a consideration of steam power plant and internal combustion engine equipment. Mr. Donovan.

Prereq.: Mathematics 7. Required of junior electrical engineers. 25: 3 rec.; 3 cr. 26: 3 rec.; 1 lab.; 4 cr.

27. Mechanical Laboratory. A study of the apparatus and methods of testing power plant operation and equipment. Mr. Donovan and Mr. Welch.

Parallel requirement: Enrollment in mechanical engineering 25, 26. Required of junior electrical engineers. 2 lab.; 2 cr.

29, 30. Mechanical Laboratory. Methods of investigating operation and testing of power plant equipment. Mr. Donovan and Mr. Welch.

Parallel requirement: Enrollment in mechanical engineering 23. Required of junior mechanical engineers. 29: 2 lab.; 2 cr. 30: 1 lab.; 1 cr.

32. Mechanical Laboratory. Testing of steam and gas engines in accordance with A.S.M.E. power test codes. Mr. Donovan.

Prereq.: Mechanical engineering 30. Required of senior mechanical engineers. 2 lab.; 2 cr.

33, 34. Power Plants. A study of the steam generating power plant dealing with its equipment and costs. Mr. Donovan.

Prereq.: Mechanical engineering 24. Required of senior mechanical engineers. 33: 2 rec.; 2 cr. 34: 1 rec.; 1 lab.; 2 cr.

35, 36. Automotive Engineering. A study of the internal combustion engine including its thermodynamics, carburetion, lubrication and vibration. Consideration is given to the design of the principal moving parts of the automotive vehicle. Mr. Stolworthy.

Prereq.: Mechanical engineering 8 and 24. Alternate with aeronautics for seniors in mechanical engineering. 2 rec.; 1 lab.; 3 cr.

37. Aeronautics. Elementary aerodynamics and aircraft construction; the use of the wind tunnel. Mr. Stolworthy.

Prereq.: Mechanical engineering 8 and civil engineering 24. Alternate with automotive engineering for seniors in mechanical engineering. 2 rec.; 1 lab.; 3 cr.

38. Meteorology and Navigation. Synoptic meteorology and a study of the instruments and methods used in navigation of aircraft. Mr. Stolworthy.

Prereq.: Physics 7. 2 rec.; 1 lab.; 3 cr. Optional for seniors in mechanical engineering.

39. Heating and Ventilating. A study of the heat losses and ventilation requirements of buildings, and the design of specific heating and ventilating systems. Mr. Stolworthy.

Required of juniors in mechanical engineering. 2 lab.; 2 cr.

41. Heating and Ventilating. A study of the present methods of heating and ventilating buildings. Mr. Stolworthy.

Required of juniors and seniors in architecture. 2 lab.; 2 cr. (Given in alternate years; not offered in 1937–38.)

45, 46. Management. A study of the principles of management as they deal with the organization of operations, the administration of personnel and the making of economic expenditures and investments. Mr. Case.

45: Required of senior mechanical engineers and optional for senior civil and electrical engineers. 46: required of all senior engineers. 45: 2 rec.; 2 cr. 46: 3 rec.; 3 cr.

47, 48. Contribution of Engineers and Scientists to the Field of Engineering. Studies of the personal characteristics and life work of engineers and scientists. This course is intended for engineering students who are disqualified from Military Science and Physical Education. Less reading will be required of students disqualified only from Military Science. Mr. Welch.

2 rec.; 2 cr.

49. Thesis. The thesis embodies research or commercial investigation. Equal emphasis is placed upon composition and accuracy in subject matter.

Required of senior mechanical engineers. 1 rec.; 2 lab.; 2 cr.

A.S.M.E. 1, 2, 3, 4. Student Branch of American Society of Mechanical Engineers. An organization of Junior and Senior students in Mechanical Engineering. The course consists of preparation and presentation of addresses on mechanical engineering topics by members and in which the instructor present criticizes the work from the point of view of delivery, subject matter and terms used.

Required of juniors and seniors in mechanical engineering. No credit.

EXTENSION COURSES*

17, 18. Mechanics of Naval Architecture. A study of volumes, weights and displacements, metacenter and buoyancy, stability and wave theory. Strength of hull and component parts of a ship. Curves of loads, shearing moments and bending moments. Calculations of horse power necessary for propulsion and resistance of ships. Screw propulsion and propulsion by wind. Rolling of ships, turning of ships, launching calculations. Mr. Getchell.

*See page 147

Prereq.: Satisfactory evidence of preparation for the course and permission of instructor. 3 rec.; 3 cr.

19, 20. MARINE ENGINEERING. The design and arrangement of the auxiliaries, parts, and equipment in the engine room of a ship. Stresses in parts, strength of parts and functional relationships will be considered and analyzed. Mr. Donovan.

Prereq.: Satisfactory evidence of preparation for the course and permission of instructor. 3 rec.; 3 cr.

MECHANICAL ENGINEERING SHOP COURSES

S1, S2. ELEMENTARY SHOP PRACTICE. For Shop work, freshmen in Technology, except those in Architecture and Chemistry, are divided into three groups meeting simultaneously in wood shop, machine shop and forge shop. The work in the wood shop consists of pattern making and elementary foundry practice. In the machine shop, practice is given in the operation of engine lathes and other machine tools, and particular attention is given to the machinability of metals in the preparation of test specimens for use in the course in strength of materials. In the forge shop study is made of the operations necessary in the forging and welding of iron and steel, in the hardening, tempering, and annealing of steel. These groups interchange at the end of each twelve week period, so that all three subjects are covered during the year. Mr. Batchelder, Mr. Tonkin, and Mr. O'Connell.

1 lec.; 2 lab.; 3 cr.

S3, (S3). WOOD WORK. Plain cabinet making and finishing; use of stain filler, varnish, shellac, enamels, etc. Mr. Batchelder.

Elective for Liberal Arts and teacher training students. 2 lab.; 2 cr.

S5, (S5). WOOD SHOP. Practice teaching under the supervision of the instructor in wood working. Mr. Batchelder.

For seniors in industrial teacher training and education. 2 lab.; 2 cr.

S6. WOOD SHOP. Advanced pattern making or advanced cabinet making. Mr. Batchelder.

Prereq.: Mechanical engineering S1 and S3. For seniors in mechanical and electrical engineering and education. 2 lab.; 2 cr.

S12. FORGE SHOP. This is a study of the forging of iron and steel, and is designed to teach the operations of drawing, welding, upsetting, twisting, splitting, and punching of iron; the hardening, tempering, and annealing of steel; and the case hardening of mild steel as adapted to agricultural work. Mr. O'Connell.

Elective for students in agricultural teacher training curriculum. 2 lab.; 2 cr.

S13, (S13). Forge Shop. Advanced work in forging, electric and acetylene welding, tempering, case hardening, tool dressing. Mr. O'Connell.

Prereq.: Mechanical engineering S1. For seniors in industrial teacher training curriculum. 2 lab.; 2 cr.

S17, (S17). Machine Shop. Continuation of work given in S1, S2. Mr. Tonkin.

Required of electrical and mechanical engineering sophomores. 2 lab.; 2 cr.

S19, S20. Machine Shop. Advanced work on the lathe, milling machine, planer, shaper and turret lathe, involving making of tools and special machinery and apparatus. Mr. Tonkin.

Prereq.: Mechanical engineering S15 and S17. 2 lab.; 2 cr.

S21, (S21). Machine Shop. Manufacturing. A course in the appreciation and measurement of skill, production methods, shop management and time study. Mr. Tonkin.

Prereq.: Mechanical engineering S20. 2 lab.; 2 cr.

S23. Farm Shop. A short course in general shop work to suit the individual needs of a small class of agricultural teacher preparation juniors. The work is to some extent adjusted to meet experience in shop work that students have already had. Mr. Tonkin and Mr. O'Connell.

Limited to agricultural teacher preparation juniors. 2 lab.; 2 cr.

MILITARY SCIENCE AND TACTICS

Colonel Edward W. Putney, *Coast Artillery Corps, Professor;* Major Donovan Swanton, *Infantry, Associate Professor;* Major George L. Prindle, *Infantry, Assistant Professor;* Major Samuel L. Buracker, *Infantry, Assistant Professor;* Captain W. George Devens, *Coast Artillery Corps, Assistant Professor;* Technical Sergeant Fred W. Wood, *Assistant;* Staff Sergeant Fred H. Brown, *Assistant.*

BASIC COURSE, INFANTRY

1, 2. Military Fundamentals. Organization of the army and infantry; military discipline, courtesy and customs of the service; military history and policy; National Defense act and the R.O.T.C.; military obligations of citizenship; the current international situation; military sanitation and first aid; weapons; rifle marksmanship; map reading; leadership; drill and ceremonies.

No prereq.: Required of freshmen. 2 rec.; 1 drill; or 3 rec., according to season; 1½ cr.

3, 4. SECOND YEAR, BASIC. Military history and policy, weapons, scouting and patrolling, musketry, combat principles, leadership, drill and ceremonies.

Required of sophomores. 2 rec.; 1 drill; or 3 rec., according to season; 1½ cr.

ADVANCED COURSE, INFANTRY

5, 6. FIRST YEAR, ADVANCED. Weapons, aerial photograph reading and interpretation, combat training, estimate of the situation and combat orders, field fortification, leadership, drill and ceremonies.

Prereq.: 4. 3 rec.; 1 drill; or 4 rec., according to season; 3 cr.

7, 8. SECOND YEAR, ADVANCED. Military history and policy; company administration; military intelligence; signal communications; chemical warfare, defensive use of non-toxic agent; military law; combat principles, platoon, company and battalion; leadership; drill and ceremonies.

Prereq.: 6. 3 rec.; 1 drill; or 4 rec., according to season; 3 cr.

BASIC COURSE, COAST ARTILLERY

9, 10. MILITARY FUNDAMENTALS. Organization of the army and coast artillery; military discipline, courtesy and customs of the service; military history and policy; National Defense act and the R.O.T.C.; military obligations of citizenship; the current international situation; primary coast artillery instruction; rifle marksmanship; ammunition, weapons and material; military sanitation and first aid; leadership; drill and ceremonies.

No prereq.: Required of freshmen in Coast Artillery. 2 rec.; 1 drill; or 3 rec., according to season; 1½ cr.

11, 12. SECOND YEAR, BASIC. Fire control and position finding for seacoast artillery; characteristics of naval targets; fire control and position finding for antiaircraft artillery; identification of aircraft; leadership; drill and ceremonies.

Prereq.: 10. Required of sophomores in Coast artillery. 2 rec.; 1 drill; or 3 rec., according to season; 1½ cr.

ADVANCED COURSE, COAST ARTILLERY

13, 14. FIRST YEAR, ADVANCED. Map and aerial photograph reading; combat orders; gunnery, seacoast and antiaircraft artillery; leadership; drill and ceremonies.

Prereq.: 12. 3 rec.; 1 drill; or 4 rec., according to season; 3 cr.

15, 16. Second Year, Advanced. Military history and policy; motor transportation; artillery tactics; artillery material, guns, carriages, mines and ammunition; military law; orientation, topographical operation required for artillery firing; field engineering; administration; leadership; drill and ceremonies.

Prereq.: 14. 3 rec.; 1 drill; or 4 rec., according to season; 3 cr.

Note.—Students following courses 1, 2; 3, 4; or 9, 10; 11, 12 above, who also elect to serve in the University band, will receive ½ credit additional per semester.

MUSIC

Robert W. Manton, *Associate Professor and Director;* Lewis C. Swain, *Instructor and Bandmaster.*

The aim of the instruction in the department of music is twofold: first, to teach music scientifically and technically, with a view to training musicians who shall be competent to teach and compose; second, to treat music historically and aesthetically as an element of liberal culture.

Closely related departments are languages (French and German), and English (English literature and appreciation of art).

It is recommended that students who intend to elect music as a major consult the head of the department as early in the freshman year as possible relative to the best disposition of the sequence of courses in the major. All students majoring in music are required to take the following subjects before graduation: Music 15, 16; 17; 19, 20; 21, 22; 23, 24; 25, 26.

For students who intend to take only one or two courses in music, for the cultivation of musical taste and general knowledge, Music 15, 16, 17, or 19, and 20 are recommended as best adapted to this end.

Students interested in some particular musical organization, such as glee club or orchestra, are permitted to elect the work desired.

1, (1). University Band

Prereq.: Ability to play some band instrument and satisfactory completion of basic course, R.O.T.C. Open to others with special permission of the professor of military science and tactics. 1½ cr.

3, (3). The Men's Glee Club

Open to all undergraduates interested in choral singing who fulfill the requirements of a try-out. ½ cr.

5, (5). Advanced Choral Club (men)

Prereq.: Music 3 and participation in some extra-curricular work. 1 cr.

7, (7). The Women's Glee Club.

Open to all undergraduates interested in choral singing who fulfill the requirements of a try-out. ½ cr.

9, (9). Advanced Choral Club (women)

Prereq.: Music 7 and participation in some extra-curricular activity. 1 cr.

11, (11). The University Symphony Orchestra

Open to all undergraduates interested in orchestral playing who can fulfill the requirements of a try-out. ½ cr.

13, (13). Advanced Orchestral Club

Departmental class illustrations, string quartet, trio playing and the like. Prerequisite: Music 11 and participation in some extra-curricular work. 1 cr.

Note: In all the above activities the educational values will be strongly stressed. The principles of ensemble, solo work, tone production, diction and above all sound musicianship, will be studied and concerts prepared separately and in combination to enhance and vitalize the university life.

15, 16. The History of Music. This course will attempt to cover the period from modern Greece up to the twentieth century. The instruction is given in the form of lectures, and stress will be placed upon an intensive study of the actual systems, spirit and content of the music of the period rather than a brief résumé of biography and critical evaluations. The four divisions of study are as follows: (1) From plain song through Palestrina, Vittoria, etc., and the secular music of the English madrigalists; (2) the seventeenth century and Johann Sebastian Bach; (3) the classicists to Schumann; (4) Schumann to Debussy. Mr. Manton.

Elective. 2 lec. or rec.; 2 cr.

17. Twentieth Century Music. This course is the logical continuation of Music 15 and 16, and emphasizes the significant trends in modern music since 1900. The works of such contemporary composers as Debussy, Sibelius, Stravinsky, Ravel, Hindemith, Schoenberg, Delius, Vaughan-Williams, Holst, Walton, Griffes, together with many others will be considered, listened to, and the values, gains, losses and shifts of emphasis discussed and every attempt made to adjust the listener's ear to the new values. Mr. Manton.

Elective. 2 lec. or rec.; 2 cr.

19, 20. The Appreciation of Music. This course begins with a study of the elements of music such as: melody, harmony, homophonic and polyphonic types, constructive formulae, and the musical forms employed in composition; for upon the recognition of these elements depends the approach to intelligent listening. Comprehensive illustra-

tions of the great musical literature with special attention to twentieth century music will be played and jointly analyzed by the instructor and students from the point of view of the listener. This course is open and especially recommended to all students who wish to become familiar with the art of music in its many phases, and gain a wider acquaintance with the past and present masterpieces of musical art. Mr. Manton.

Prereq.: 19 prerequisite for 20. 3 lec. or rec.; 2 cr.

21, 22. Harmony, The Grammar of Music. The fundamental principles of the craft of music are embodied in the study of harmony. This course treats of the different chords in their natural and combined relations: triads, seventh and ninth chords with their inversions and resolutions; cadences, chromatically altered chords, augmented chords, suspensions; embellishing tones, modulation, melody writing, and pedal point. This subject normally covers three semesters' work.

The work consists of exercises on figured basses and the harmonization of given melodies and dictation. This course is especially recommended to freshmen but may be elected by others. The ability to play some instrument will facilitate an understanding of the course. Mr. Manton.

Prereq.: 21 prerequisite for 22. 2 lec. or rec.; 2 cr.

23, 24. Advanced Harmony and Strict Counterpoint. This course is intended to supplement Music 21 and 22, and to lay stress on the many significant innovations found in modern harmony; to make a study of modal harmony and its relation to the appreciation of fifteenth and sixteenth century music; and to study the five orders of strict two-part counterpoint. Mr. Manton.

Prereq.: Music 22. 23 prerequisite for 24. 2 lec. or rec.; 2 cr.

25, 26. Counterpoint and Elementary Composition. Counterpoint is the combining of several melodic voices, a horizontal conception of writing, and is essential to all finished craftsmanship. The work will consist of the writing of three and four-part counterpoint, double counterpoint, choral figuration and free imitation.

The work in composition will include the detailed training relative to sentence formation, figure treatment, two-part and three-part forms, inventions, the variation forms, and the various rondo forms up to the sonata form. Mr. Manton.

Prereq.: Music 22 and 24. 25 prerequisite for 26. 3 lec. or rec.; 2 cr.

27, 28. Instrumentation. This course is designed to ground the student in the idiomatic writing and technique necessary to score effectively for the modern symphonic orchestra. It necessitates a good grasp of the fundamental principles of harmony and counterpoint. All the orchestral instruments will be considered individually as to their tech-

nique, range, tonal qualities, possibilities and limitations; then in separate choirs, and finally in combination as a unit.

Orchestral scores will be studied in detail; score reading and reduction emphasized; and original work in this idiom encouraged. Mr. Manton.

Prereq.: Music 22 and 24. 3 lec.; 3 cr.

29, 30. The History and Development of Choral Music. This is a special course consisting of lectures, reading and reports. Only a limited number of qualified students will be admitted.

The course is designed to trace a straight line through such study as: plain song, folk song, the music of the troubadours, the beginnings of harmony and counterpoint, the works of the Netherland masters and of Palestrina and his contemporaries; the German choral works of the Reformation, the important Elizabethan group of madrigalists in England; the choral works of Bach, Handel, etc. It ends with a consideration of the choral literature of the nineteenth century and of the modern English, French, and Russian choral composers, such as Elgar, Delius, Holst, Vaughan-Williams, Lambert, Walton, Honegger, etc.

Students will meet three times a week, the third meeting being devoted to class singing and study of the works considered in the lectures. Mr. Manton.

3 lec. or rec.; 2 cr. (Given in alternate years; not offered in 1938–39.)

31, 32. Public School Music and Its Allied Fields. The purpose of this course is three-fold in nature. First, it attempts to lay down basic method material and principles of approach for the purpose of cultivating a taste for the best music; it is also shown how these methods and repertoire may be applied through the junior and senior high school periods. Second, it seeks to cultivate, through the principles of appreciation, a growth in perception, understanding, and general responsiveness to the art of music, approaching it through formal design and emotional content. Third, it endeavors to give the individual student training and practical experience in the art of conducting, organization and the production of artistic results in glee clubs and orchestras.

Prereq.: 31 prerequisite for 32. 2 lec. or rec.; 2 cr.

33, 34. Canon and Fugue. Canon and fugue are the most advanced forms of polyphonic composition and require a thorough grounding in harmony and counterpoint. The object of this course is to perfect the contrapuntal technique of the student, enabling him to study the larger and freer forms of composition. The work will be based on the fugal works of Bach and Franck, and consists of practice in writing, the more practical types of canon, and of the analysis and composition of fugues. Mr. Manton.

Prereq.: Music 22, 24, and 26. 33 prerequisite for 34. 2 lec. or rec.; 2 cr.

UNIVERSITY OF NEW HAMPSHIRE

PHILOSOPHY AND PSYCHOLOGY

HERBERT F. RUDD, *Professor;* ADOLPH G. EKDAHL, *Associate Professor;* NAOMI G. EKDAHL, *Assistant Professor.*

PHILOSOPHY

PROFESSOR RUDD

49. INTRODUCTION TO PHILOSOPHY. A general survey of the persistent problems of life in the light of modern scientific and philosophic insights. Topics include the origin and nature of the universe, of life, and of mind; also the nature of religious, ethical and aesthetic values.

Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

50. THE ART OF THINKING: LOGIC. A study of the many factors which determine the quality of human thinking as trustworthy or untrustworthy and an effort to discover all of the aids to better thinking practices.

Prereq.: Philosophy 49. Elective for sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

81. MAJOR MOVEMENTS IN EUROPEAN PHILOSOPHY. A selective study of the most significant systems from Thales to Nietzsche.

Elective for juniors and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

82. MAJOR SYSTEMS AND PROBLEMS OF CURRENT PHILOSOPHY. A study of the chief efforts to build integrated world-views in the light of modern scientific, economic and social changes; and the possibilities of a constructive synthesis of modern thought patterns.

Prereq.: Philosophy 81 or its equivalent. Elective for juniors and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

83. THE EVOLUTION OF SOCIAL VALUES AND ETHICAL JUDGMENTS. An outline of the development of biological, psychological and social capacities which are essential to the appearance of any community values; a study of the moral significance of early group life; the economic and cultural factors which shape value systems; the divergent patterns of moral sentiment in advanced civilizations; and possible standards of judging folkways and ethical assumptions.

Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

84. ETHICAL PROBLEMS OF TODAY. An analysis of the factors which bring personal and social crises in the present generation; and a study of the ideals, principles and programs which may successfully meet these problems.

Prereq.: Philosophy 83. Elective for juniors and seniors. 3 lec. or rec.; 3 cr.

85, 86. The Philosophy and Culture of the Far East. A study of major movements in the life and thought of eastern Asia.

Elective for juniors and seniors. 3 lec. or rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

87, 88. Seminar: Special Problems in Philosophy.

Elective for seniors with the consent of the instructor. Credit to be arranged.

PSYCHOLOGY

Associate Professor A. G. Ekdahl; Assistant Professor N. G. Ekdahl.

Graduate work: For courses primarily for graduate study see catalog of the graduate school.

21, 22. Elementary Psychology. This course is a study of the individual personality. It is designed to assist the individual to avoid unwholesome attitudes and cultivate wholesome ones. Practical helps will be given in regard to study and vocational and social problems. In the second semester, the student will learn of the laws and principles of general elementary psychology, with their applications to everyday situations. Mr. Ekdahl and Mrs. Ekdahl.

3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

25, 26. Applied Psychology. The elementary laws, facts and principles of psychology are considered with special reference to the problems of advertising and selling. In the second semester, psychological problems relating to general industrial efficiency and personnel are considered. Mr. Ekdahl.

Prereq.: Psychology 21. 3 lec. or rec.; 3 cr. (Formerly given as 55, 56.)

48. Abnormal Psychology. A study of abnormal phenomena such as the disorders of perception, association, memory, judgment and the personality. The symptoms of the more common psychoses will be presented and some mention made of the psychoneuroses. A brief review of mental defectiveness will also be given. Visits to institutions. Mr. Ekdahl.

Prereq.: Psychology 21. 3 lec. or rec.; 3 cr.

51. Psychology of Childhood and Adolescence. A study of the normal child and adolescent. The mental processes and emotional reactions are studied in order that child and adolescent personality may be understood. Suitable for those preparing to be teachers, homemakers, social workers, pediatricians, nurses, school psychologists, and clinicians. Mrs. Ekdahl.

Prereq.: Psychology 21. 3 lec. or rec.; 3 cr.

52. Learning and Measurements. This course is a study of the learning process of the individual and a survey of measurements of intelligence and educational achievement. Administration of intelligence tests and construction of informal objective examinations are projects of the course. Mrs. Ekdahl.

Prereq.: Psychology 21. 3 lec. or rec.; 3 cr.

7, 58. Experimental Psychology. Standard experiments on sensation, perception, association, imagination, learning and reasoning. Emphasis will be given toward the development of the proper technique of psychological investigation. Mr. Ekdahl.

Prereq.: One year of psychology. 1 lec; 2 lab.; 3 cr.

62. Mental Hygiene. A study of the problem individual. Prevention of problems is stressed but detection and simple diagnosis taught. Ways and means of maintaining a normal mind and re-educating the individual of distorted attitudes are discussed. Case studies are made and an instruction trip taken. Suitable for those preparing to be teachers, home-makers, social workers, physicians, nurses, school psychologists, and clinicians. Mrs. Ekdahl.

Prereq.: Psychology 21. 3 lec. or rec.; 3 cr.

65. Physiological Psychology. A study of the physiological aspects of sensations, perceptions, memory and learning and a consideration of possible correlations between nerve functions and mental activity. Mr. Ekdahl.

Prereq.: One year of psychology. 3 lec. or rec.; 3 cr.

66. Comparative Psychology. A study of psychogenesis beginning with the one-celled animals. Simple experiments in animal learning. Mr. Ekdahl.

Prereq.: One year of psychology. 3 lec. or rec.; 3 cr.

68. Systematic Psychology. A brief survey of the field of theoretical psychology. Psychological concepts and theories as developed by the various modern "schools" of psychology, such as Functionalism, Behaviorism, Gestalt, and Structuralism, are considered. Mr. Ekdahl.

Preq.: One year of psychology. 3 lec. or rec.; 3 cr.

71, 72. Seminar: Special Problems in Psychology. Mr. Ekdahl and Mrs. Ekdahl.

Prereq.: Two years of psychology. ½ to 3 cr.

PHYSICAL EDUCATION

PHYSICAL EDUCATION FOR MEN

WILLIAM H. COWELL, *Professor, Director of Athletics;* HENRY C. SWASEY, *Associate Professor;* PAUL C. SWEET, *Assistant Professor;* ERNEST W. CHRISTENSEN, *Assistant Professor;* CARL LUNDHOLM, *Assistant Professor;* GEORGE H. SAUER, *Assistant Professor;* CHARLES M. JUSTICE, *Instructor;* JOHN J. CONROY, *Instructor;* EDWARD J. BLOOD, *Instructor.*

AIMS—1. To promote regulated exercise, and to provide an incentive and opportunity for every student to receive physical recreation.

2. To secure good posture, a uniform development, and a reasonable amount of bodily skill and grace.

3. To stimulate the habit of exercise.

REQUIREMENTS.—All men students in the freshman and sophomore classes are required to complete the prescribed work in physical education. All men disqualified from the regular class work in physical education shall be required to register for work in corrective gymnastics, unless excused by the university health officer upon recommendation of the university physician.

The gymnasium suit adopted by the department consists of a gray cotton sleeveless jersey, gray trunks with blue trimming on leg seams, white woolen socks, and rubber-soled tennis or basketball shoes. This suit must be worn at all class exercises in physical education.

The minimum requirement of each semester's work calls for participation in some form of approved physical exercise for two periods weekly for 13 weeks.

Students may elect any scheduled activity desired, either as members of an organized athletic squad or as members of regular sections of an approved activity.

The activities which are offered during the year are baseball, basketball, cross country, football, hockey, skating, skiing, snowshoeing, tennis, track, and volley ball.

(*Consult "Subject and Room Schedule" for schedule of approved activities.*)

31, 32. PHYSICAL EDUCATION. The program for the year consists of numerous seasonal activities. Students may elect the activity desired. For students physically unfit, corrective gym work will be prescribed.

Required of all freshmen. Work, 2 hrs.; ½ cr.

33, 34. Physical Education. The year's program consists of numerous seasonal activities. Students may elect the activity desired. For students physically unfit, corrective gym work will be prescribed.

Required of all sophomores. Work, 2 hrs.; ½ cr.

COURSES OF TEACHER PREPARATION CURRICULUM

The courses described in the paragraphs which follow are required of students registered in the university physical education teacher preparation curriculum for men. Students should consult the curriculum description which appears on pp. 132, 135.

61. The Teaching of Recreational Activities. This course will deal with methods and materials of instruction, theories of play and actual practice for the successful teaching of recreational activities in school, on the playground and in the community. The course will include studies of activities adapted to different levels of maturity.

Prereq.: Zoölogy 17, 18. 3 rec.; 3 cr.

62. Camp Administration. History of the purposes and practices of organized camping. Survey of various health and safety requirements and minimum standards for organized camps including leadership, water-safety, food, sanitation, motor vehicles, insurance and records. Activities for camp programs in crafts, athletics, nature study and woods lore, social programs and creative entertainment. Comparison and evaluation of methods and results of camp programs. Program planning for various age and sex groupings according to background and physical and financial possibilities. Each student who has not already done so must complete American Red Cross Senior Life Saving Tests as a requirement of this course. It is advisable that students shall have had some experience in organized camp life.

Prereq.: Zoölogy 17, 18. 3 rec.; 3 cr.

64. Community Recreation. Survey of the development and present status of theories of play and its values. Discussion of the scope of recreation and its place in the education of individuals of all ages and in the services rendered by organizations. Consideration of problems facing community recreation leaders such as public attitude and support, program planning for particular situations, physical facilities, adequate leadership and adaptation to current social changes. Study of existing agencies of recreation and their methods and accomplishments. Supervised participation by each student in planning, leading, and reviewing recreation programs for a variety of groups. Study of specific examples from camps, organized athletics, Grange programs, rural recreation in extension work and other programs in New Hampshire.

Prereq.: Zoölogy 17, 18. 3 rec.; 3 cr. (Not offered in 1938–39. Students are permitted to substitute Sociology 38.)

65. Organization and Administration of Health and Physical Education Programs in Secondary Schools. To familiarize the student with the aims and objectives of health and physical education that are in keeping with present educational theories and practices. It is to teach the student how to organize and supervise a complete unified program of health and physical education including the legal aspects, intra-mural and interscholastic athletics, medical problems, budgeting, financing, maintenance of equipment, publicity programs and office management. Each student will be given an opportunity to serve on a committee to draw up an original program of health and physical education in a theoretical or actual situation found in some secondary school.

Prereq.: Zoölogy 17, 18, P.E. 61 and P.E. 62 or 64, and two courses in the coaching of sports. These last may be taken concurrently. 3 rec.; 3 cr.

COURSES IN PROBLEMS OF COACHING

38. Winter Sports. Instruction and practice in ski jumping, downhill, slalom and cross country skiing and snowshoeing. Instruction in conditioning of men, waxing of skis and selection and care of equipment. A study of the organization and management of winter carnivals and other competitions. Special emphasis on methods of teaching skiing.

2 rec.; 2 cr.

45. Football. A history of football with consideration of its educational implications and an analysis of the various systems of play. Instruction in team and individual offensive and defensive fundamentals. Students will become thoroughly acquainted with the rules, theory, strategy, generalship of team play and the responsibilities of the coach for the physical welfare of the team.

Prereq.: Zoölogy 17, 18. 2 rec.; 2 cr.

46. Baseball. Theoretical and practical consideration of the basic principles of batting and fielding. A careful study of the fundamentals of each position. Special stress on problems involving team play, coaching methods, physical conditioning and rules. A history of the game with a consideration of its educational values.

Prereq.: Zoölogy 17, 18. 2 rec.; 2 cr.

47. Track and Field Athletics. Instruction and practical demonstrations in starting, sprinting, middle distance and distance running, relay racing, hurdling, high and broad jumping, pole vaulting, shot putting, discus, hammer and javelin throwing. Practical instruction on methods of preparing contestants for the various events.

Prereq.: Zoölogy 17, 18. 2 rec.; 2 cr.

48. Basketball. History of basketball with a consideration of its educational values. Theory and practice in the fundamentals of individual offense and defense. A study of the various styles of team

offense and defense and rules of the game. Problems in handling and conditioning a team.

Prereq.: Zoölogy 17, 18. 2 rec.; 2 cr.

COURSES IN SUPERVISED COACHING

EDUCATION-PHYSICAL EDUCATION (ED-P.E.) 93 (93). DIRECTED TEACHING IN PHYSICAL EDUCATION ON THE CAMPUS. An opportunity under the supervision of the physical education staff, to handle required physical education activities and to coach class teams.

Prereq.: Zoölogy 17, 18, P.E. 61 and P.E. 62 or 64. The student must have completed the methods course in the sport which he is directing or take the course concurrently. 2 to 4 cr.

EDUCATION-PHYSICAL EDUCATION (ED-P.E.) 94. SUPERVISED TEACHING IN PHYSICAL EDUCATION IN THE FIELD. The course provides an opportunity under joint supervision of the physical education and education departments, to coach athletics in secondary schools and to assist in supervising a recreational program.

Prereq.: Zoölogy 17, 18; P.E. 61, 65 and P.E. 62 or 64, methods courses in those sports in which the student intends to become actively engaged. 2 to 4 cr.

PHYSICAL EDUCATION FOR WOMEN

MARGARET R. HOBAN, *Assistant Professor and Director;* MARION BECKWITH, *Instructor;* NELL W. EVANS, *Instructor;* DOROTHY PIERCE, *Graduate Assistant.*

REQUIREMENTS. Freshman women are required to take Physical Education 1, 2. Every woman student must take at least one course of physical activity each semester of her freshman, sophomore, and junior years. One additional activity each semester, or a physical education theory course each year, may be elected for credit. Except in special cases, the same activity shall not be credited more than twice.

Zoölogy, psychology, and education are related departments. Certain courses in these departments will be accepted for the completion of a major.

Each student must, upon entering, have a physical examination by the university physician and a posture test by the physical education staff. Semester activities elected by students are approved by the department on the basis of the results of these examinations. Students unfit for active physical education are assigned theoretical work in hygiene.

OBJECTIVES. To encourage wholesome recreational activities; to establish fundamental health habits; to maintain a balance between mental and physical development.

REQUIRED COSTUME. White step-in blouse, New Hampshire blue tunic, blue ankle-length hose, and regulation gymnasium shoes.

1, 2. PHYSICAL EDUCATION. A study of the art of healthful living. Problems of health, personal appearance, conduct, and personality will be discussed. In addition, practical work in physical education will be scheduled as follows:

First semester. Hockey, soccer, tennis, archery, basketball, formal gymnastics, informal gymnastics, folk dancing. (Consult course time and room schedule for combinations of the above courses according to season of the year.) Individual gymnastics continues throughout the semester and is required of each freshman whose physical condition indicates this need.

Second semester. Informal gymnastics, formal gymnastics, basketball, archery, tennis, baseball, lacrosse. (Consult course time and room schedule for combinations of the above courses according to season of the year.) Individual gymnastics continues throughout the semester and is required of each freshman whose physical condition indicates the need.

Required of all freshmen. 1 lec. or rec.; 2 lab. periods; 2 cr.

11, 12. PHYSICAL EDUCATION. Elective courses open to freshmen may be chosen from the list under Physical Education 3, 4.

2 periods; 1 cr.

3, 4. PHYSICAL EDUCATION. *First semester.* Archery, tennis, hockey, soccer, bowling, formal gymnastics, fencing, basketball. (Consult course time and room schedule for combinations of the above courses). Tap dancing, modern dancing, individual gymnastics. (These activities continue throughout the semester.)

Second semester. Informal gymnastics, fencing, tap dancing, bowling, winter sports, archery, tennis, lacrosse, baseball, golf. (Consult course time and room schedule for combinations of the above courses according to season of the year.) Dancing, individual gymnastics. (These courses continue throughout the semester.)

Required of sophomores. 2 periods; 1 cr.

13, 14. PHYSICAL EDUCATION. Elect semester courses from the list under Physical Education 3, 4.

Open to sophomores. 2 periods; 1 cr.

5, 6. PHYSICAL EDUCATION. Elect semester courses from the list under Physical Education 3, 4.

Required of juniors. 2 periods; 1 cr.

15, 16. PHYSICAL EDUCATION. Elect semester courses from the list under Physical Education 3, 4.

Open to juniors. 2 periods; 1 cr.

7, 8. Physical Education. Elect semester courses from the list under Physical Education 3, 4. Seniors majoring in this department are expected to elect this course.

Open to seniors. 2 periods; 1 cr.

17, 18. Physical Education. Elect semester courses from the list under Physical Education 3, 4. Seniors majoring in this department are expected to elect this course.

2 periods; 1 cr.

In addition to the regulation costume required of all students, the following regulations and approximate prices should be noted: students are required to furnish their own individual equipment for such activities as tennis, tap dancing, modern dancing, individual gymnastics, winter sports. For bowling there is a charge of 20 cents a class.

MAJOR COURSES

Students majoring in physical education are expected to take the courses listed below. Women students from other departments may, however, elect any of these courses provided they have the proper prerequisites.

19. Introduction to Physical Education. A study of the history of physical education and the factors which have influenced the physical life of nations. Miss Hoban.

2 lec.; 2 cr.

21, 22. Play and Recreational Leadership. This course includes the theories of play, the place of play in education; administration and organization of play, leadership of play and recreation, hobbies, camping, pageantry, dancing, and leisure time activities. For those who intend to do playground, summer camp, or community recreation work. Miss Hoban.

3 lec.; 3 cr.

31, 32. The Theory and Coaching of Athletics. A detailed study of the principles involved in the teaching of team games and individual sports. Emphasis will be placed on coaching methods and officiating. Miss Evans, Miss Beckwith.

1 lec. or rec.; 4 lab.; 2 cr.

41, 42. Remedial Gymnastics and Massage. This course deals with the adaptation of exercise to individual needs; physical abnormalities and their corrections; theory and practice of massage. Miss Hoban.

Prereq.: Zoölogy 1, 2; 3, 4. 41 prerequisite for 42.
2 lec. or rec.; 2 lab.; 3 cr.

(P–E) 91, 92. Problems in the Teaching of Physical Education for Women and Supervised Teaching. The course is devoted to the organization of a comprehensive program of activities from the primary grades through college. Opportunity will be given for supervised teaching in the grades and high school. Miss Hoban.

3 lec. or rec.; 2 lab.; 4 cr.

PHYSICS

Horace L. Howes, *Professor;* Clement Moran, *Associate Professor;* Raymond R. Starke, *Assistant Professor;* William H. Hartwell, *Assistant Professor;* Irving H. Solt, *Assistant Professor;* Harold I. Leavitt, *Instructor.*

The department of physics is housed in the west end of DeMeritt hall. In the basement are located the introductory physics laboratory with apparatus room, an electrical measurements laboratory, a switchboard hall, a storage room and a suite of dark rooms to accommodate students in photography. On the first floor are located the general physics laboratory and apparatus room, a recitation room and the department office. On the second floor is located the lecture room, with adjoining apparatus room.

Instruction in physics is given primarily by recitations and laboratories, with frequent lectures, examinations, written reports and personal conferences. The aim of the department is to develop student minds capable of doing independent thinking in the science of physics. There is a small but well chosen collection of apparatus for use in laboratories and lectures.

1, 2. Introductory Physics. The properties of matter, heat, magnetism, electricity, wave-motion, sound and light. The course includes experimental lectures and laboratory exercises in addition to recitations from Black's College Physics. Mr. Moran, Mr. Starke, Mr. Hartwell, Mr. Solt, and Mr. Leavitt.

Required of students in agriculture. Elective for liberal arts students. 1 lec.; 2 rec.; 1 lab.; 4 cr.

3, 4. Physics for Architects. An introductory course in which attention is given to stresses in solids, pressure in fluids, transmission of heat, distribution of illumination, acoustics, etc. Lectures, recitations, problem work and experiments. A knowledge of high school algebra and geometry is presupposed. Mr. Leavitt.

Required of sophomores in architecture. Elective for liberal arts students. 1 lec.; 2 rec.; 1 lab.; 4 cr.

5, 6. Pre-Medical Physics. A course in the general principles of physics with attention to the needs of the students in preparation for medical work, such as the presentation of data in graphical form, also the handling of electrical apparatus. Mr. Starke and Mr. Hartwell.

Open only to juniors and seniors in the pre-medical curriculum. 3 rec.; one 3-hour lab.; conferences; 5 cr.

7, 8. General Physics. Mechanics and properties of matter; heat; selected topics in sound and light; electricity and magnetism; from Duff's "Physics for Students of Engineering Science." Mr. Howes, Mr. Moran, Mr. Starke, Mr. Hartwell, Mr. Solt, and Mr. Leavitt.

Prereq.: Mathematics 3 or 6 in advance, and mathematics 7, 8 either in parallel or as a prereq. Physics 7 prerequisite for 8. Required of sophomores in chemical, civil, electrical and mechanical curricula. Elective for those liberal arts students who have passed 1, 2 and have the prerequisites in mathematics. 1 experimental lec.; 3 rec.; 1 problem hour; 4 cr.

9. General Physics Laboratory. Open only to those students who are studying physics 7, or who have previously obtained credit for physics 7. Experiments in mechanics and properties of matter, with report writing and curve plotting of data. The reports are carefully criticized by the department and corrected by the student. Appreciation of the laws of physical science; the development of laboratory technique, and the estimation of the limitations of scientific experimentation are the aims. Mr. Howes, Mr. Hartwell, Mr. Solt, and Mr. Leavitt.

Prereq.: The same as those for physics 7, 8. Required of sophomores in chemical, civil, electrical and mechanical curricula. Elective for liberal arts students under the same conditions as specified for physics 7. 2 lab.; 3 cr.

10. General Physics Laboratory. A continuation of physics 9 to include experiments in heat, sound, light, electricity and magnetism.

Prereq.: Physics 7 and 9. Physics 8 in parallel or as a prerequisite. Required of students in chemical, civil, mechanical and electrical curricula. Elective for liberal arts students. 2 lab.; 3 cr.

14. Elementary Optics and Photography. The fundamental principles of geometric optics as applied to photographic instruments. Laboratory work includes a study of focal planes, images, and other properties of lenses, together with the making of photographs. Students will furnish their supplies, which will cost approximately $2.00. Mr. Moran.

Prereq.: Physics 2, or 8. Course not open to freshmen. 1 lec.; 1 rec.; 1 lab.; 3 cr.

51. Theory of Electrons. A brief study of the theory of electricity to include the passage of a current through a gas, the mobility of ions, the determination of charge and mass of the electron, ionization by collision, the corona discharge, cathode rays, positive rays, thermionic emission, photo-electricity, and X-rays. Mr. Howes.

Prereq.: Physics 7, 8; mathematics 7, 8. Required of seniors in electrical engineering curriculum. Open to juniors or seniors in liberal arts on the same conditions. 2 lec.; 2 cr.

52. Electrical Measurements. Experiments on the use of precision potentiometers, the constants of sensitive galvanometers, time tests of batteries, low resistance by the Kelvin double bridge, high resistance by the method of leakage, the use of alternating current bridges for measuring capacity, self and mutual inductance and frequency, the characteristics of various types of photo-electric cells, and the Millikan oil-drop experiment. Mr. Moran.

Prereq.: Physics 8 and 10. Required of students in electrical engineering and chemistry. 1 lec.; 1 lab.; 3 cr.

54. Acoustics. An elementary course in the principles of sound origins, propagation, and reception. The course consists of lectures and recitations based on Sound by Watson. Mr. Howes.

Elective for students who have passed physics 2 or 8. 3 lec.; 3 cr.

POLITICAL SCIENCE

Thorsten Kalijarvi, *Professor;* Irving R. Hobby, *Instructor.*

Courses in this department aim at giving the student a foundation of political science which should not only serve the purpose of general culture, but also prepare for more intensive work in fields of specialized study, such as law, teaching, politics, government service, and social work. Students are urged to supplement their political science with other courses especially English, economics, history, and sociology.

1, 2. Citizenship. The chief aims of this course are: to acquaint the student with what it means to live in present-day society; to make him aware of the political and social institutions by which he is controlled; to develop in him an independent and informed attitude on vital political questions; to consider problems of political expression, public opinion, the history, membership, structure and aims of organizations exerting political pressure, nominations, and elections, political democracy, and the meaning of the state. Tolerance and the scientific approach toward views differing from the student's own will be stressed. The first semester will consider man in his political environment, the principles which obtain therein, and the ways in which man is politically conditioned by all kinds of forces, especially physical, economic, and social. The latter part of the first semester and all of the second will be devoted to current political situations and problems. Mr. Kalijarvi and Mr. Hobby.

3 lec. or rec.; 3 cr.

3, 4. American Government. A discussion of the work and organization of federal, state, and local government, and political parties in the United States. Emphasis will be placed upon the functional relations between the several branches of government, and between political organizations and governmental policies. Mr. Hobby.

Prereq.: 3 prerequisite for 4. Open to sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

5, 6. European Governments. A survey of the character, form and political practices of contemporary foreign governments. Some attention will be given to contemporary movements and developments. A comparison of the organs of governments as they are observed in action or as they may be evaluated in theory. Mr. Hobby.

Open to sophomores, juniors, and seniors. 3 lec. or rec.; 3 cr.

7, 8. International Law. The study of the law governing the relations of states, consisting primarily of discussions supplemented by the preparation of hypothetical cases. Mr. Kalijarvi.

Prereq.: One semester's work in political science. 7 prerequisite for 8. Junior course. 3 lec. or rec.; 3 cr.

51. Constitutional Law. The case study of the constitutional development of the United States in terms of supreme, federal, and state court decisions. Mr. Kalijarvi.

Prereq.: One year's work in political science. Junior course. 3 lec. or rec.; 3 cr.

52. Introduction to Jurisprudence. A study of the generalized principles of law and legal institutions. A survey of the law as an institution of social and political control. Discussion and lecture. Mr. Kalijarvi.

Prereq.: Political science 7 or 8 or 51. 3 lec. or rec.; 3 cr. (Given in alternate years; not offered in 1938–39.)

53, 54. Political Theory. A reading course in the classics of political thought, including one important work of Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Burke, Paine, Adam Smith, Ricardo, Bentham, Marx, and of others as time will permit. An effort will be made to analyze the political philosophy of the several 19th century schools, and to give the student a philosophical approach to modern political problems. Mr. Hobby.

Prereq.: Two years' work in political science. Senior course. 3 lec. or rec.; 3 cr.

55, 56. International Relations and World Government. A study of the forms of international organizations and world politics. This course deals with the rise of the modern nations and their relation

to each other. Special effort is made to acquaint the student with the international world in which he is living. Mr. Kalijarvi.

Prereq.: Two years' work in political science. Open to seniors majoring in history and economics. 3 lec. or rec.; 3 cr.

58. PUBLIC ADMINISTRATION. Government on its practical side calls for a knowledge of the administration of modern states. Some of the subjects which this course will consider are: administrative law; public relations; personnel; financial administration; governmental reporting; staff functions; public health; welfare; judicial administration; conservation of natural resources; government in business; government promotion of commerce and industry; and the construction of public works. Mr. Hobby.

Prereq.: Political Science 3, 4 or to juniors and seniors who are taking Political Science 3, 4. 3 lec. or 3 rec.; 3 cr. (Given in alternate years; offered in 1938–39.)

59. THE GOVERNMENT OF THE STATE OF NEW HAMPSHIRE. (See page 182.)

60. THE CONTEMPORARY AMERICAN POLITICAL SCENE. (See page 182.)

9, 10. SEMINAR. Papers will be prepared on assigned topics, and reports made under the guidance of the head of the department. Mr. Kalijarvi.

Prereq.: 9 prerequisite for 10. For majors who have completed two years' work in political science. ½ to 4 cr.

POULTRY HUSBANDRY

T. BURR CHARLES, *Professor;* CARL L. MARTIN, *Assistant Professor;* CHARLES A. BOTTORFF, *Assistant Professor;* ALBERT E. TEPPER, *Instructor.*

1. FARM POULTRY. A course devoted to a study of the general principles of poultry husbandry and their practical applications. Emphasis is placed on factors of culling, breeding, housing, feeding, marketing, diseases and parasites, incubation and management. Mr. Charles.

Recommended elective for freshmen in agriculture. 2 lec.; 1 lab.; 3 cr.

3, 4. POULTRY PROBLEMS. Students make a study of various selected poultry problems, compiling and presenting such accurate and detailed information as will add materially to their fund of knowledge. Mr. Charles, Mr. Martin.

Required of certain seniors in poultry husbandry. Hours to be arranged. 1 cr.

6. Poultry Breeding. A study of the genetic principles involved in breeding for egg production, including practical application and demonstration. Mr. Charles.

Prereq.: Poultry husbandry 1. Required of all juniors in poultry. Elective for others. 2 lec.; 2 cr.

7. Poultry Breeds and Judging. The origin, history and classification of breeds. Theory and practice in judging fowls for egg production and exhibition. Students interested in intercollegiate poultry judging should elect this course. Mr. Tepper.

Required of juniors in poultry. Elective for others. 2 lec.; 1 lab.; 3 cr.

8. Incubation and Brooding. A study of the principles involved in incubation and brooding of poultry; embryonic development. Students individually operate incubators and care for groups of chicks. Mr. Charles.

Prereq.: Poultry husbandry 1. Required of seniors in poultry. Elective for others. 2 lec.; 1 lab.; 3 cr.

9. Poultry Marketing. The preparation of poultry and eggs for market. A study of egg qualities and grades, candling and packaging; study of egg and poultry market conditions; practical instruction in killing, picking, dressing and similar operations. Mr. Tepper.

Required of all seniors in poultry. Elective for others. 2 lec.; 2 cr.

10. Poultry Feeding. A study of the principles of feeding; analysis of recent experimental work and current feed problems. Each student will care for a group of birds for several weeks for practical observation and collection of data. Mr. Tepper.

Prereq.: Poultry husbandry 1. Required of seniors in poultry. Elective for others. 2 lec.; 1 lab.; 3 cr.

11. Poultry for Teachers. This course is designed to give to teacher preparation students the information which they will need in teaching courses in poultry in secondary schools. Open to teacher preparation students only. Mr. Tepper.

Hours to be arranged. 2 cr.

12. Poultry Housing. Design and construction of poultry houses and equipment. Study of plans; costs of materials; management principles. Mr. Tepper.

Required of certain seniors in poultry. Elective for others. 1 lec.; 1 lab.; 2 cr.

13. Poultry Management. The application of successful business principles to poultry farming; study of surveys and production costs.

As a part of the laboratory work, a detailed "three year" development plan of a poultry farm will be studied. Mr. Charles.

Prereq.: Poultry husbandry 1. Required of juniors in poultry. Elective for others. 2 lec.; 1 lab.; 3 cr.

14. Poultry Practice. This course is designed to give the student practical work at the university poultry plant in the hatching, rearing and care of chickens. Mr. Charles.

Required of all juniors in poultry. Ten hours of practical work. 4 cr. (Note: By permission of the department, students who have had previous practical poultry experience may substitute 4 semester credits of electives for this course.)

15. Poultry Diseases. A study of the anatomy of the fowl and poultry diseases and parasites encountered in poultry practice. Lectures and laboratories for discussion of methods of prevention and control. Mr. Bottorff.

Prereq.: Poultry husbandry 1. Required of all seniors in poultry. Elective for others. 3 lec.; 1 lab.; 4 cr.

17, 18. Poultry Seminar. A consideration of experimental data on all phases of poultry husbandry. Students abstract and report on various current poultry topics. A thesis will be required. Mr. Charles.

Prereq.: Poultry husbandry 1. Required of all seniors in poultry husbandry. Elective for others. 1 hour conference; 1 cr.

SOCIOLOGY

Charles W. Coulter, *Professor;* Joseph E. Bachelder, Jr., *Instructor.*

It is the aim of the department: (1) to develop in the student an understanding of the society in which he lives—its laws, processes, institutions and organizations, so that he may effectively function as a unit in the social order; (2) to provide for pre-professional and limited professional training in the methods and techniques of social work; (3) to provide a professional background for students preparing to teach sociology in secondary schools.

Requirements for a major in sociology—24 semester credits with a grade of 75 or better. Students electing a major are expected to include Principles of Sociology 1; Social Psychology 2; Methods of Social Progress 84, or Methods of Social Research 75; and at least 6 semester credits (depending on field of interest) of specified work in one or more of the following correlated departments: economics, political science, history, psychology, home economics or zoölogy.

1. Principles of Sociology. A comprehensive study of the underlying laws of human society, especially those governing the origin,

growth and decline of institutions; group relationships to biological and geographic environments; social processes such as conflict, competition, imitation, accommodation, coöperation, assimilation and differentiation; societal isolation; culture, its organization, content, location and formation; social institutions including the familial, religious, economic, educational, recreational and political; social change with its attendant maladjustments, and social control. Mr. Bachelder.

3 lec. or rec.; 3 cr.

2. Social Psychology. An analysis of the social aspects of personality, of the process whereby the individual's impulses are defined by the cultural patterns of the group, of the processes by which one acquires the social world in which he lives, and of the factors which determine attitudes, wishes, habit systems, one's conception of himself and his social role. A critical discussion of the methods utilized at present for the study of human nature introduces the course. Mr. Coulter.

3 lec. or rec.; 3 cr.

53. Cultural Anthropology and Ethnology. This course includes: (a) a comparative study of primitive folk-ways, institutions and social organization, marriage, economic activities, religion, property inheritance and folklore; an examination of the factors affecting culture and the principles of its development; a consideration of the significance of primitive culture for an understanding of contemporary civilization. (b) A comparative study of peoples; environmental factors; societal effect of invasion, colonization, and linguistic fusions; race and class struggles; jingoism; race relations in mid-European territory and in the Far East; the problem of world peace. Mr. Coulter.

Prereq.: Sociology 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

54. The Immigrant and the Negro. An investigation of negro and immigrant heritage with special reference to the problems of assimilation and Americanization. Attention is directed to intensive study of selected groups, the Negro, the Jew, the Italian, the Pole, the Greek, the French-Canadian, and the Japanese. Mr. Coulter.

Prereq.: Sociology 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

57. Rural Sociology. A study of the foundation materials of rural life; the physical setting—land, land-policies, land-tenure; land-economics; farm and village population—its composition, its changes; the income basis of rural life, the standard of living; rural habits, attitudes; rural groupings, arrangements, the mechanisms of communication and social control; a study of rural institutions with respect to welfare, sociability, education and religion. Mr. Bachelder.

Prereq.: Sociology 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

60. Urban Sociology. A study of the changes in community life that have come with the shift of population from rural districts to the city; the factors involved in the rapid growth of cities since 1800; physical structure of the city, processes of internal growth; the segregation which makes of the city a mosaic of distinct cultural worlds; increase in mobility which multiplies social stimuli; typical areas within the city—foreign colonies, rooming house districts, apartment and hotel areas, outlying areas of homes; the effect of the city upon community life, the family, church, school, unorganized group behavior, attitudes and life organization of the person. Mr. Bachelder.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr.

61. Social Pathology. A survey of personal, institutional and community disorganization. A study of the social factors involved in alcoholism, drug addiction, prostitution, poverty, vagrancy, juvenile and adult delinquency, divorce and desertion; and instances of the break-down of public opinion, and of community, family, religious and legal sanctions as forces for social control. A consideration of remedial measures based upon a discussion of human nature and the physical conditions of modern life. Especially recommended for pre-medical, pre-legal, and other students who will be handling social variants in the field of their professions. Mr. Bachelder.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr.

62. Community Organization. A study of town and country community organization with respect to natural and interest groupings and with respect to relationships between town and country; the survey; methods of analyzing problems of community organization; methods of utilizing institutions and equipment in the development of programs and organizations for health, recreation, general welfare and control. Mr. Bachelder.

Prereq.: Sociology 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

71. Crime and Its Social Treatment. A brief presentation of the increase and extent and more popular theories of crime: delinquency, juvenile and adult. Case studies of disorders of conduct and of the criminal behavior of individual delinquents with special reference to the influence of family and neighborhood environments; typical social situations and their influence upon specific types of delinquencies; programs for the social treatment of crime, the reorganization of reformatory institutions, classification of offenders for separate treatment, the "honor system," limited self-government, parole and probation, and the juvenile court as agencies for the prevention of delinquency. Mr. Coulter.

Prereq.: Sociology 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

72. The Family. The rise of the marriage institution and the family. Modern problems of the family: divorce, desertion, changing status of women, child welfare, child labor laws, and related problems. Mr. Coulter.

Prereq.: Sociology 1 and 2, or by special permission. 3 lec. or rec.; 3 cr.

75. Methods of Social Research. A study of the methods of science and research, the prospects of the social sciences, and the application of the historical, survey, statistical and case methods to social data. Emphasis is also given to the procedure involved in making social studies, i.e., the use of bibliography, definition and selection of the problem, determination of the data needed, collection and arrangement of the data for presentation and exposition. Mr. Bachelder.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr.

76. Principles of Social Case Work. An analysis of the present trend in family case work; consideration of the techniques of interviewing, diagnosis, treatment and case recording; the significance of present day relief practices. Mr. Bachelder.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr.

84. Methods of Social Progress. A study of efforts to improve social conditions and attain a larger measure of social justice. Community experiments. The development of modern social legislation. The application of the principles of insurance to social problems. Various forms of mutual aid and of philanthropy. Endowments and special foundations. Mr. Coulter.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr.

87. The Church in American Society. Contemporary organizations for worship in the community, their correlation, functions, and problems. The rise of the Church and its relation to labor, the state, school, social welfare agencies; significance to the community of its organization and financing. Church federation and union. Mr. Coulter.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr. (Not offered in 1938–39.)

88. Recreation and Leisure. Problems arising from the increase of leisure time in modern society; typical leisure time activities; theories of play; practical training programs in recreation.

A study of the function of leadership in this connection; analysis of types and qualities of leadership as exhibited by typical leaders; a consideration of the material and program of leadership training. Mr. Bachelder.

Prereq.: Sociology 1 and 2. 3 lec. or rec.; 3 cr.

89, 90. Development of Sociological Thought. The history of sociological thought, with special reference to the writings of Comte, Spencer, and the later writers of the nineteenth century; a comparison of contemporary sociological systems. Mr. Coulter.

Prereq.: Sociology 1 and 2. 89 prerequisite for 90. 3 lec. or rec.; 3 cr. (Not offered in 1938–39.)

95, 96. Sociological Research. A seminar for conference and reports on research projects arranged for graduates and seniors who have completed major work in sociology. General topic first semester, social control; second semester, social legislation. Mr. Coulter and Mr. Bachelder.

Prereq.: Sociology 75 and 84. 3 meetings; 3 cr.

97, 98. Social Service and Field Work. A course designed to give the student practical experience in social work. Field work is done in connection with neighboring social agencies, and is supplemented by readings, lectures and conferences. Mr. Coulter.

Prereq.: Sociology 76. The course may be taken during the college year for 3 credits each semester, or during the summer in connection with certain approved settlements, correctional institutions, or case work agencies. Eight weeks' summer residence with an agency is required, for which a maximum of 6 credits is given.

ZOÖLOGY

C. Floyd Jackson, *Professor;* Alma D. Jackson, *Associate Professor;* Edythe T. Richardson, *Assistant Professor;* Lloyd C. Fogg, *Assistant Professor;* Earl E. Hoover, *Assistant Professor;* Ruth E. Thompson, *Instructor;* Eleanor L. Sheehan, *Instructor;* W. Robert Eadie, *Instructor;* C. Dorothy Calnan, *Assistant;* Russell P. Hager, *Graduate Assistant.*

The University is favorably situated geographically for the study of zoölogy. Within a few minutes' walk of the laboratory, the Oyster river meets the tide water from Great bay. This furnishes a graduation of salt, brackish and fresh water with an abundance of their characteristic fauna. On the other hand, there are numerous bodies of fresh water, with typical fresh water forms.

The department of zoölogy is prepared to offer courses in systematic zoölogy, physiology, sanitation, philosophical zoölogy, and anatomical zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the student's disposal.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive. In addition to the

regular collecting equipment, nets, aquaria, etc., advanced students also have the use of rowboats and a gasoline launch.

In the work in physiology, hygiene and sanitation, the department is provided with an unusually fine collection of injected preparations of the human body, and with numerous charts.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great bay and vicinity are encouraged, for which purpose the students have the use of camera equipment. In addition to the study of evolution under natural conditions the department also furnishes aquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Students majoring in zoölogy will ordinarily find it desirable to elect courses in botany and chemistry. If the objective is the teaching of biology, a combined major in botany and zoölogy will be allowed. Such students should complete the freshman courses in these subjects as early in their curricula as possible.

Students planning to fill pre-medical requirements should consult the pre-medical curriculum. Students interested in dentistry may elect a modified pre-medical curriculum.

1, 2. Principles of Zoölogy. An elementary study of the principles of life, its development, structural basis and physiological activity. The course is continuous throughout the year. This course is intended to give a practical knowledge of animal life, and is required of all pre-medical students and others intending to major in the department of zoölogy. Mr. Jackson, Miss Thompson, Miss Sheehan, Mr. Eadie, Mr. Fogg, Mrs. Richardson, Miss Calnan.

Prereq.: 1 prerequisite for 2. Freshman course. 3 lec. or rec.; 1 lab.; 4 cr.

3, 4. Hygiene and Sanitation. A detailed study of the principles of health preservation. The course deals with hygiene of digestion, muscular hygiene, neural hygiene, and various other important physiological processes affecting health. The latter half of the work is devoted to a study of food, water, and general sanitation, and the control of bacterial disease. The course is continuous throughout the year. Mr. Fogg.

Prereq.: One year of zoölogy. 3 prerequisite for 4. 3 lec. or rec.; 3 cr.

5, 6. Evolution and Eugenics. Lectures and assignments dealing with the various problems of evolution and their relation to human life. Evidence of man's origin based on anatomical, embryonic, and

paleontological data will be discussed. This will be followed by a consideration of the chief problems of eugenics. Miss Thompson.

Prereq.: Two years of zoölogy. 5 prerequisite for 6. 3 lec. or rec.; 3 cr.

7, 8. VERTEBRATE FIELD ZOÖLOGY. A study of general ecological principles as applied to vertebrate animals. Types of habitats with the characteristic vertebrate associations occurring in each, and the relation of the animals to the environment will be considered. This is a non-technical course particularly adapted for those interested in outdoor life. Mr. Jackson and Mr. Eadie.

Prereq.: Permission of the instructor. 7 prerequisite for 8. 2 lec. or dis.; 1 lab.; 3 cr.

9, 10. FIELD EQUIPMENT AND TECHNIQUE. The organization and use of field equipment for zoölogical study and for recreational purposes. A consideration of the equipment necessary for the collection of scientific data, and the clothing and supplies needed for general out-of-door life. Packs and transportation by canoe, and the handling and driving of sled dogs and their use for sport or scientific field work. The course parallels the work in field zoölogy (Zoölogy 7, 8) and is adapted for students interested in fish and game management or other phases of economic zoölogy as well as those interested in outdoor recreation. Mr. Jackson.

Prereq.: Permission of the instructor. 1 lec., rec. or lab.; 1 cr.

15, 16. COMPARATIVE ANATOMY OF THE VERTEBRATES. A comparative study of the anatomy of vertebrate animals, illustrating the evolution of the organs and systems in the mammals. Selected vertebrate types are dissected in the laboratory. Mr. Eadie.

Prereq.: Zoölogy 2. 15 prerequisite for 16. Sophomore course. 1 lec.; 2 lab.; 3 cr.

17, 18. HUMAN ANATOMY AND PHYSIOLOGY. A survey of the structure and function of the human body, with a detailed study of the different systems. Collateral readings, written reports and conferences required. Mrs. Richardson.

Prereq.: Zoölogy 2. 17 prerequisite for 18. 3 lec.; 3 cr. (3 lec.; 1 lab.; 4 cr.—for majors in physical education for women and men in Physical Education Teacher Preparation curriculum.)

ADVANCED COURSES

51, 52. INVERTEBRATE ZOÖLOGY. A study of the structure, habits, and ecological relationships of the different groups of invertebrate animals.

Given at the Isles of Shoals marine laboratory during the summer session.

53. 54. Histology. A study of the microscopical anatomy of the human body. The slides used in the laboratory are correlated with the class work. The course is of special value to pre-medical students and majors in zoölogy. Mrs. Jackson and Mr. Hager.

Prereq.: Two years' work in zoölogy and permission of the instructor. 53 prerequisite for 54. 3 lec. or rec.; 1 lab.; 4 cr.

55, 56. Embryology. The study of type forms illustrating the fundamental principles of the embryonic development of animals. The course is of special value to pre-medical students and majors in zoölogy. Mr. Fogg and Mr. Hager.

Prereq.: Three years' work in zoölogy and permission of the instructor. 55 prerequisite for 56. 3 lec. or rec.; 1 lab.; 4 cr.

57, 58. Laboratory Technique. A general laboratory course in the methods used in the preparation of zoölogical material, microscope slides, mounting embryos, making serial sections, etc. Will be adapted to individual needs as far as possible. Mrs. Jackson.

Prereq.: Permission of the instructor. 57 prerequisite for 58. 1 lec.; 2 lab.; 3 cr.

59, 60. Advanced Physiology. An advanced study of human physiology with special emphasis on nutrition, circulation, respiration, excretion and secretion. The work will consist of lectures, assigned topics and laboratory experiments. Mrs. Richardson and Mr. Eadie.

Prereq.: Two years' work in zoölogy. 59 prerequisite for 60. 3 lec. or rec.; 3 cr. (3 lec. or rec.; 1 lab.; 4 cr., by permission of the instructor.)

61, 62. Cytology and Genetics. A detailed study of the cell, including morphology, the chemical and physical nature of protoplasm, mitosis, meiosis, syngamy, and related phenomena leading up to the physical basis of inheritance and the study of Mendel's laws, the expression and interaction of the genes, linkage, sex and its inheritance, the inheritance of quantitative characters, and the types and causes of variations. Mrs. Richardson.

Prereq.: Two years' work in zoölogy. 61 prerequisite for 62. 3 lec. or rec.; 1 lab.; 4 cr. (Given in alternate years; offered in 1938–39.)

63, 64. Neurology. A comparative study of the nervous systems of the lower animals and a detailed study of the morphology, physiology, and histology of the human nervous system. This subject is intended to give a practical knowledge of the nervous system and its operation. Mrs. Richardson and Mr. Eadie.

Prereq.: two years' work in zoölogy. 63 prerequisite for 64. 3 lec. or rec.; 1 lab.; 4 cr. (Given in alternate years; not offered in 1938–39.)

Biology-Education (bi-ed) 91. Problems in the Teaching of High School Biology. Materials and methods in presenting the subject of biology in secondary schools and introductory college courses will be discussed. There will also be a general survey of the field of biology for the purpose of correlating the various lines of work previously studied.

Given at the Isles of Shoals marine laboratory during the summer session.

Education-Zoölogy (ed-zoöl) 93, 94. Supervised Teaching in Zoölogy. Qualified students will be allowed to teach under supervision in the freshman laboratory. The course will include a review of general zoölogy and will be an introduction to teaching for zoölogy students. Students planning to teach biology should supplement this course with similar work in the department of botany. Students who desire to take supervised teaching in high schools may elect 94 as 6 credits under the usual regulations of the department of education. Miss Sheehan.

Prereq.: Senior standing and the permission of the instructor. 1 lec. or rec.; 1 or 2 lab.; 2 or 3 cr.

95, 96. Problems of Conservation Research. A problems course open to advanced students or students who show unusual promise in the field of research. Problems will be available in all phases of conservation work and specifically in applied chemistry, zoölogy, ecology, genetics, limnology and silviculture. The nature of the problems will be determined by the need of the New Hampshire fish and game department for research in various fields and the background and interests of individual students. Mr. Hoover.

Prereq.: Permission of the instructor. 1 conference, 2 lab.; 4 cr.

97, 98. Special Problems and Seminar. Seminar discussions on current zoölogical literature will be conducted each week. In addition, advanced students may elect a special problem provided they present a detailed outline of the subject which they wish to investigate and, furthermore, provided they can furnish adequate proof of their ability to carry the problem in view of their past training and the equipment available. Mr. Fogg and the staff.

Prereq.: Permission of the instructor. Graduate or undergraduate credit. Credits to be arranged.

SERVICE COURSES

48. General Zoölogy. A study of the principles of animal life, with a special emphasis on human anatomy and physiology, although the

general principles of physiology, embryology and genetics as applied to all forms of animals will be discussed. Mrs. Jackson.

Required of sophomores in agriculture. Open only to students in agriculture. 3 lec.; 3 cr.

49. Genetics. A detailed study of the physical basis of inheritance, laws governing Mendelian inheritance, and the application of such laws to plant and animal breeding. (Same content as 62.) For agricultural students. Mrs. Richardson.

2 lec. or rec.; 2 cr.

THE TWO-YEAR CURRICULUM IN AGRICULTURE

M. Gale Eastman, *Dean*

The two-year curriculum in agriculture, established in 1895, affords a splendid opportunity for the farm boys of the state to acquaint themselves with the fundamental principles and with the latest and most approved practices of agriculture. This curriculum is arranged especially for the young men who wish to make a business of dairying, livestock raising, poultry, horticulture or general farming, but who do not have the time, money or preparation to take a regular four-year curriculum.

All required courses in the two-year curriculum are separate and distinct from those of the four-year curricula, but some electives are allowed from four-year courses. The work includes training in botany, chemistry, English, and zoölogy as fundamental to the study and interpretation of information dealing with the successful production of plants and animals on the farm. To such a background of science and culture through the two years of work are added courses in the field of agriculture which will give as thorough and practical training as the limited time will permit. These agricultural courses include practice both in the laboratory and in the field. The facilities of the university's dairy barn, livestock barn, poultry plant, horticultural farm, and forest, as well as the milk pasteurizing, ice cream, and apple storage and packing plants on campus, are always available for class work with students.

Military science is not required in the two-year curriculum but any student desiring to take the course may elect it with the four-year students.

A student who meets the entrance requirements of the university may receive credit towards graduation from a four-year curriculum in the College of Agriculture for work completed with a grade of 75 or better in certain agricultural courses of the two-year curriculum.

Entrance Requirements.—The two-year curriculum is open to both young men and young women. The only entrance requirements are a common school education involving a reasonable knowledge of reading, writing, spelling, arithmetic, English grammar, geography, and United States history. The curriculum is best adapted to students from 17 to 21 years of age. Older students frequently take the curriculum, but younger ones are not encouraged to enter.

Tuition and Fees.—The tuition for students who are residents of New Hampshire is $75 per year. For out-of-state students the tuition is $175 per year. One-half of the tuition is payable at the beginning of each semester.

SCHOLARSHIP.—The university grants to residents of New Hampshire a limited number of scholarships which cover the tuition charges. Students desiring to secure scholarships should apply to the Student Aid committee, Durham, N. H.

EXPENSES.—The expenses of this curriculum will vary with the tastes and frugality of the students. An estimate of the expenses for one year is as follows:

	High	*Average*	*Low*
Tuition	$175	$75	Free
Books	30	25	$22
Room	120	72	64
Board	200	200	175
Laundry	35	20	15
Incidentals	50	30	25
	$610	$422	$301

FARM EXPERIENCE REQUIREMENT.—In order to graduate from this curriculum each student must present satisfactory evidence of having had practical experience in farm work, either through having worked on a farm for at least two years after he was 12 years of age, or through having worked on a farm for at least four months after he was 15 years of age.

OPENING, CLOSING.—The curriculum for this year will open Monday, September 19, 1938, and will close Monday, June 12, 1939.

Two-year students are not required to attend Freshman week, which begins September 13, 1938, but they may do so if they wish.

CERTIFICATE OF GRADUATION.—No degree is given at the end of this period of study, but a "certificate of graduation" is presented upon the completion of the prescribed curriculum of 64 credits or its equivalent.

TWO-YEAR CURRICULUM IN AGRICULTURE

First Year

	First Semester Credits	Second Semester Credits
Convocation (*Required*)		
Phys. Ed. 1, 2	½	½
Agr. Chem. 201 (*General*)	4	
Agr. Econ. 201 (*Rural*)	2	
Agr. Eng. 202 (*Drawing*)		1
A. H. 202 (*Types and Breeds*)		3
Bot. 201 (*Elements*)	4	
D. H. 201 (*Farm Dairying*)	3	
Eng. 201, 202 (*Grammar and Composition*)	3	3
Hort. 202 or 214 (*Pomology or Vegetable Gardening*)		3
P. H. 202 (*Farm Poultry*)		3
Elective		2
	16½	15½

Second Year

Convocation (*Required*)		
Agr. Econ. 203 (*Farm Accounts*)	2	
Agron. 201, 202 (*Crops; Soils, Fertilizers*)	3	4
M. E. 202, 204 (*Forging; Carpentry*)		2
Ent. 202 (*Principles*)		2
For. 201 (*Farm Forestry*)	2	
Zoöl. 201 (*Physiology and Hygiene*)	2	
Elective	7	8
	16	16

Elective Courses*

Agr. Econ. 205, 204 (*Marketing; Farm Management*)	1	2
Agr. Eng. 203, 204 (*General; Power and Machinery*)	2	2
*A.H. 2 (*Judging*)		1
*A.H. 5, 6 (*Veterinary Science*)	3	3
*A.H. 7, 8 (*Animal Breeding; Meat and its Products*)	3	2
*A.H. 9 (*Horses and Beef Cattle*)	3	
*A.H. 10 (*Sheep and Swine*)		3
A.H. 204 (*Feeds and Feeding*)		3
Bot. 202 (*Diseases*)		2
D.H. 203, 204 (*Manufacturing; Production*)	3	3
*Hort. 1 (*Harvesting and Marketing*)	3	
*Hort. 3 (*Judging*)	2	
*Hort. 13, 28 (*Vegetable Forcing; Landscape Gardening*)	3	3
*Hort. 39 (*Greenhouse*)	3	
Hort. 241, 242 (*Advanced*)	Arr.	Arr.
*P.H. 6 (*Breeding*)		3
*P.H. 9, 8 (*Marketing; Incubation and Brooding*)	2	3
*P.H. 10 (*Feeding*)		3
*P.H. 12, 13 (*Housing; Management*)	2	3
*P.H. 15 (*Diseases*)	4	
P.H. 203 (*Breeds and Judging*)	3	

* Note: Numbers less than 200 indicate four-year courses, which may be elected by two-year students subject to the approval of the head of the department concerned. The passing grade for two-year students in these courses shall be 50.

DESCRIPTION OF COURSES OF TWO-YEAR CURRICULUM IN AGRICULTURE

The faculty of the two-year curriculum is composed of the following members of the university instructional staff: L. J. BATCHELDER, *Instructor in Woodshop;* J. G. CONKLIN, *Instructor in Entomology;* H. A. DAVIS, *Assistant in Agricultural and Biological Chemistry;* STUART DUNN, *Assistant Professor of Botany;* G. M. FOULKROD, *Assistant Professor of Agricultural Engineering;* H. C. GRINNELL, *Assistant Professor Agricultural Economics;* J. R. HEPLER, *Associate Professor of Horticulture;* L. J. HIGGINS, *Assistant Professor of Agronomy;* MRS. A. D. JACKSON, *Associate Professor of Zoölogy;* H. C. MOORE, *Assistant Professor of Dairy Husbandry;* K. S. MORROW, *Professor of Dairy Husbandry;* E. M. O'CONNELL, *Instructor in Forging;* W. C. O'KANE, *Professor of Economic Entomology;* T. G. PHILLIPS, *Professor of Agricultural and Biological Chemistry;* G. F. POTTER, *Professor of Horticulture;* A. E. RICHARDS, *Professor of English;* A. E. TEPPER, *Instructor in Poultry Husbandry;* L. V. TIRRELL, *Professor of Animal Husbandry;* K. W. WOODWARD, *Professor of Forestry.*

AGRICULTURAL CHEMISTRY

201. AGRICULTURAL CHEMISTRY. A study of the elementary principles of chemistry and of the chemistry of plants, soils, fertilizers, foods and animal physiology. Mr. Phillips, Mr. Davis.

Required first year. 3 lec. or rec.; 1 lab.; 4 cr.

AGRICULTURAL ECONOMICS

201. RURAL ECONOMICS. Text book, lectures, and recitations on the development and significance of agricultural problems in our modern economy. Mr. Grinnell.

Required first year. 2 lec.; 2 cr.

203. FARM RECORDS AND ACCOUNTS. Practice in methods of keeping accounts and records of the farm business and the practical interpretation of their summaries as affecting profits in farming. Mr. Grinnell.

Required second year. 1 lab.; 2 cr.

204. FARM MANAGEMENT. Lectures and practical problems concerning farming as a business. Types of farming, size of business, production, balance in organization, labor efficiency, cropping systems, farm layout, etc. Mr. Grinnell.

Elective second year. 1 lec.; 1 lab.; 2 cr.

205. Agricultural Marketing. A general discussion of the intricate marketing system with special reference to marketing functions, marketing agencies, and methods of sale. Some commodity grades and standards investigated. Special phases of coöperative marketing developed. Mr. Grinnell.

Elective second year. 1 lec.; 1 cr.

AGRONOMY AND AGRICULTURAL ENGINEERING

Agronomy

201. Field Crops. A study of the most important crops in New England with special emphasis on those of this state. Attention will be given to their history, value, production, management and use. The laboratory work will be as practical as possible, including identification in the laboratory and field, judging and farm seed testing. Mr. Higgins.

Required second year. 2 lec. or rec.; 1 lab.; 3 cr.

202. Soils and Fertilizers. A study of the physical, chemical and biological properties of soils and the fundamental considerations of soil management will be offered in the first half of the semester. The second half of the semester will cover fertilizers and farm manures, giving consideration to occurrence and function of plant food, care and use, and the response of crops to the same. Mr. Prince and Mr. Higgins.

Required second year. 3 lec. or rec.; 1 lab.; 4 cr.

Agricultural Engineering

202. Agricultural Drawing. A course designed to meet the needs of the men directly engaged in agriculture, including practice in lettering, sketches of farm layouts, machine drawing and blue-print reading, and making plans for minor farm buildings. Mr. Foulkrod.

Required first year. 1 lab.; 1 cr.

203. Basic Agricultural Engineering Applications. Agricultural engineering methods applied to the solution of every-day farm problems. Farm mechanics, farm mapping, farm sanitation and water supply, as well as types and purposes of farm buildings and their equipment, are covered in theory and demonstration. Mr. Foulkrod.

Elective second year. 1 lec.; 1 lab.; 2 cr.

204. Farm Power and Machinery. A course designed particularly for the manager or foreman. Selection, care, repair and methods of use of electrical equipment, field machinery, engines, light plants, motors and tractors, with special emphasis on adaptability to local conditions. Mr. Foulkrod.

Elective second year. 1 lec.; 1 lab.; 2 cr.

ANIMAL HUSBANDRY

202. Types and Breeds of Livestock. A study of the various breeds of horses, cattle, sheep and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. Mr. Tirrell.

Required first year. 2 lec. or rec.; 1 lab.; 3 cr.

204. Feeds and Feeding. An elementary study of the laws of nutrition, the character, composition, and digestibility of feed stuffs, and the methods of feeding different kinds of farm animals. Numerous samples of grain and by-products are used for the purpose of familiarizing the students with the different feed stuffs. Practice is given in calculating rations for various purposes. Mr. Tirrell.

Elective second year. 3 lec. or rec.; 3 cr.

BOTANY

201. Elements of Botany. The student is given a succinct account of the form and structure of plants, and of how plants grow and feed. Mr. Dunn.

Required first year. 2 lec. or rec.; 2 lab.; 4 cr.

202. Fungous Diseases of Plants. The principal fungous diseases of our cultivated plants, their cure and their prevention. Mr. Dunn.

Elective second year. 1 lec.; 1 lab.; 2 cr.

DAIRY HUSBANDRY

201. Farm Dairying. A general study of milk and its products. Mr. Moore.

Required first year. 2 lec.; 1 lab.; 3 cr.

203. Manufacturing of Dairy Products. A study of the production, handling, and distribution of milk; manufacturing and distributing ice cream, butter, condensed milk, and other dairy products. Mr. Moore.

Prereq.: Dairy husbandry 201. Elective second year. 2 lec.; 1 lab.; 3 cr.

204. Dairy Production. The field of dairy husbandry in its relation to the producer. Care, feeding and management of dairy animals; dairy herd development; dairy cattle judging. Mr. Morrow.

Elective second year. 2 lec.; 1 lab.; 3 cr.

ENGLISH

201, 202. Grammar and Elementary Composition. Mr. Richards.

Required first year. 3 lec. or rec.; 3 cr.

ENTOMOLOGY

202. Principles of Economic Entomology. The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. Mr. O'Kane, Mr. Conklin.

Required second year. 1 lec. or rec.; 1 lab.; 2 cr.

FORESTRY

201. Farm Forestry. The care and management of farm woodlots; log and board scaling; logging and milling; estimating standing timber; protection from fire, insects, fungi, etc.; thinning immature stands; seeding and planting; natural regeneration. Mr. Woodward.

Required second year. 1 lec. or rec.; 1 lab.; 2 cr.

HORTICULTURE

202. Elementary Pomology: Orchard and Small Fruits. A brief consideration of the principles and practice involved in orcharding and in the culture of the most important of the small fruits. Mr. Potter.

Required of first-year students who do not take horticulture 214. Elective for other students. 2 lec.; 1 lab.; 3 cr.

214. Elementary Vegetable Gardening. A study of the home vegetable garden, and also of the methods used in commercial vegetable production. Mr. Hepler.

Required of first-year students who do not take horticulture 202. Elective for other students. 2 lec.; 1 lab.; 3 cr.

241, 242. Advanced Horticulture. Special work in any phase of horticulture may be taken by arrangement with the head of the department. Mr. Potter and staff.

Prerequisites will depend upon the work taken. Elective second year. Hours and credits to be arranged.

MECHANICAL ENGINEERING

202. Forge Shop. This is a study of the forging of iron and steel, and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction,

care, and management of the forge, and instruction is given in tempering, case hardening and annealing. Mr. O'Connell.

Required second year. 1 lab.; 1 cr.

204. Wood Shop. Farm carpentry and joinery. Care and use of tools, making of implements for the farm, and care of lumber on the farm. Mr. Batchelder.

Required second year. 1 lab.; 1 cr.

POULTRY HUSBANDRY

202. Farm Poultry. A general course designed especially for two-year students who are going back to the farm to engage in practical poultry work. The course will include work in managing, feeding, housing, breeding, incubation, brooding, and marketing, with practical laboratory work. Mr. Tepper.

Required first year. 2 lec.; 1 lab.; 3 cr.

203. Breeds and Judging. The history and classification of the various breeds and varieties of poultry. Practicum consists of judging and selecting for egg production and exhibition qualities. Mr. Tepper.

Elective second year. 2 lec.; 1 lab.; 3 cr.

ZOÖLOGY

201. Elementary Anatomy and Physiology. A general survey of the structure of the human body, together with the study of the basic principles of animal life. Mrs. Jackson.

Required first year. 2 lec. or rec.; 2 cr.

COMPARATIVE REGISTRATION

	Regular Curricula	Summer School and Short Curricula*	Men (Less duplicates)	Women (Less duplicates)	Total (Less duplicates)
1893–94	64	..	54	10	64
1894–95	93	15	78	30	108
1895–96	83	29	80	32	112
1896–97	88	17	79	26	105
1897–98	82	50	90	42	132
1898–99	82	10	79	13	92
1899–1900	86	33	103	16	119
1900–01	93	32	115	10	125
1901–02	102	29	125	6	131
1902–03	103	18	117	4	121
1903–04	110	24	126	8	134
1904–05	123	36	151	8	159
1905–06	154	41	183	12	195
1906–07	172	38	196	14	210
1907–08	183	20	188	15	203
1908–09	198	33	218	13	231
1909–10	193	55	312	16	328
1910–11	207	73	249	17	280
1911–12	231	84	285	22	315
1912–13	259	95	306	30	354
1913–14	300	103	322	63	403
1914–15	387	131	405	87	518
1915–16	461	192	505	113	653
1916–17	574	92	514	152	666
1917–18	530	32	399	163	562
1918–19†	593	14	439	168	607
1919–20	774	44	631	187	818
1920–21	845	46	682	209	891
1921–22	907	66	759	214	973
1922–23	1,036	161	922	275	1,197
1923–24	1,154	175	993	336	1,329
1924–25	1,202	229	1,029	402	1,431
1925–26	1,348	267	1,143	471	1,614
1926–27	1,491	317	1,217	567	1,784
1927–28	1,658	306	1,277	626	1,903
1928–29	1,553	365	1,294	624	1,918
1929–30	1,586	367	1,285	668	1,953
1930–31	1,646	382	1,297	664	1,961
1931–32	1,712	437	1,354	669	2,023
1932–33	1,673	463	1,429	610	2,039
1933–34	1,616	341	1,295	586	1,881
1934–35	1,520	360	1,212	574	1,786
1935–36	1,626	369	1,316	624	1,940
1936–37	1,623	367	1,304	638	1,942

* Includes Summer School, Two-Year Agriculture, Poultry Extension and Dairy Short Curricula.

† During 1918–19 there were 1,467 additional men registered for special military work under the S.A.T.C. organization.

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